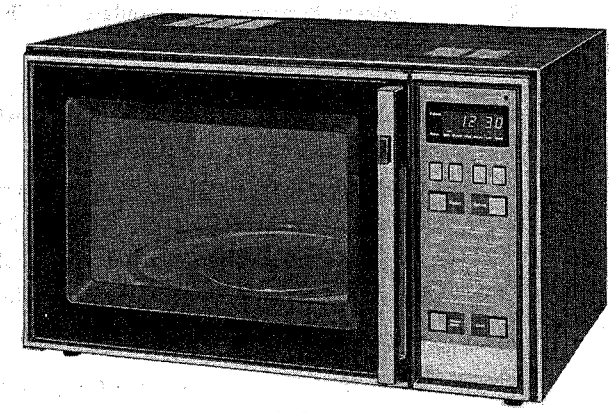
Service Manual

Microwave Oven

NE-7910, NE-7910C
NE-7810, NE-7810C

NE-7910
NE-7910C



NE-7810
NE-7810C

NE-7910, NE-7810 for U.S.A.

NE-7910C, NE-7810C for Canada

SPECIFICATIONS	NE-7910 NE-7910C NE-7810, NE-7810C
Power Source	115V AC Single Phase: 60Hz
Power Requirement	1.61KW (14 A)
High Frequency Output	700W: full power
Oscillation Frequency	2450 MHz
Magnetron	2M157-M1
Timer	99 minutes 99 seconds
Cooling Method	Air Cooling
Approximate Outside Dimensions	24-3/4" (W) x 18-1/2" (D) x 14-3/4"(H) 63.0 cm (W) x 47.0 cm (D) x 37.5 cm (H)
Approximate Oven Cavity Dimensions	15-1/2" (W) x 15-1/2" (D) x 9-1/2" (H) 39.5 cm (W) x 39.5 cm (D) x 24.0 cm (H)
Approximate Weight	70 lbs 31.8 Kg

Specifications subject to change without notice.

Panasonic®

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1571

WARNING

1. This product should be serviced only by trained qualified personnel.
2. Though this product has been manufactured in compliance with:
   "Federal Performance Standard 21 CFR Subchapter J" (HEW): NE-7910, NE-7810
   or "Radiation Emitting Devices Act" (NHW): NE-7910C, NE-7810C
   it is very important when servicing to avoid being exposed to excessive microwave radiation. This may be hazardous. All repairs should be made in accordance with procedures described in this manual.
3. Check for radiation leakage after every servicing according to the "procedure for measuring radiation leakage" on pages 23 to 25.
4. Any serviceman who learns of any accident pertaining to microwave radiation leakage should immediately notify the appropriate address listed below.

IN U.S.A.	PANASONIC COMPANY Division of Matsushita
(MECA)	Electric Corporation of America
	One Panasonic Way, Secaucus, New Jersey 07094
	Attention: Quality Assurance Dept.
	(201) 348-7000
IN HAWAII	PANASONIC HAWAII, INC.
(PHI)	320 Waiakamilo Road, Honolulu, 96817
	(808) 847-5361
IN CANADA	MATSUSHITA ELECTRIC OF CANADA LIMITED
(MELCA)	40 Ronson Drive, Rexdale, Ontario, Canada, M9W 1B5
	(416) 248-5551

5. There are special components used in the microwave oven which are important for safety. These parts are shaded on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

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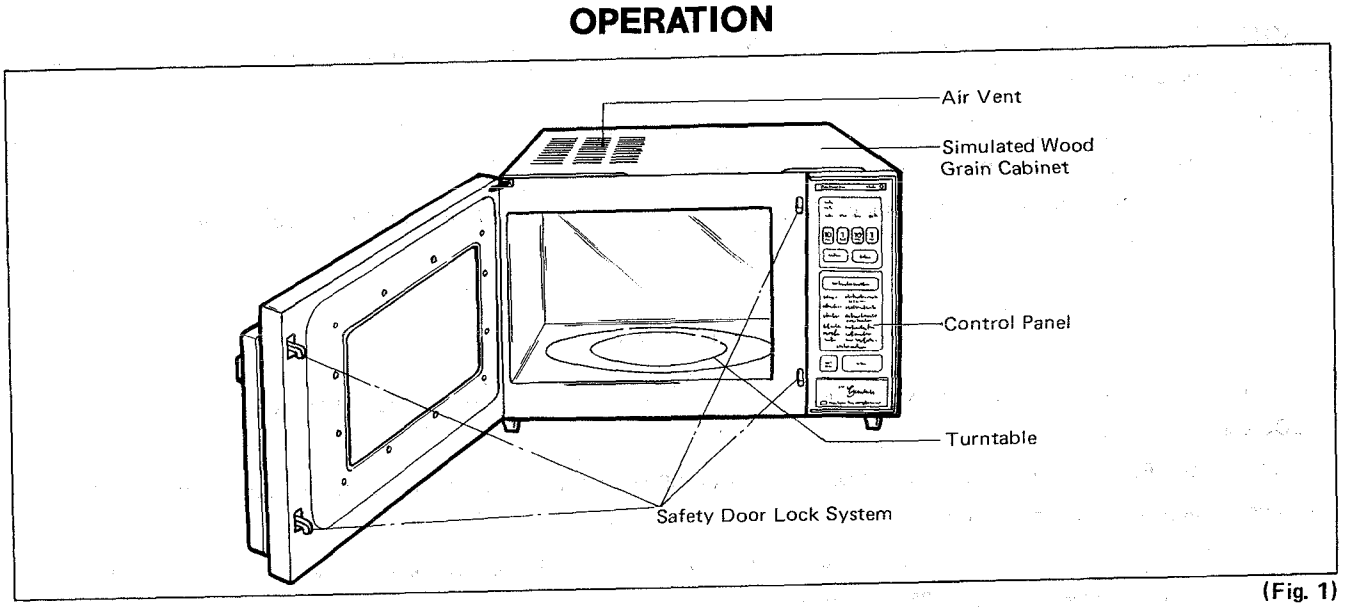
INSTALLATION

1. Check the grounding.
2. Confirm the power source capacity.
3. Use the microwave oven in an ambient temperature of less than 104°F (40°C).
4. Avoid using the microwave oven where humidity is high.
5. Position the microwave oven away from radios, TV's, etc.
6. Place the microwave oven on a stable base.
7. Avoid placing anything on the top cover of the microwave oven that may interfere with the exhaust vents.

OPERATION

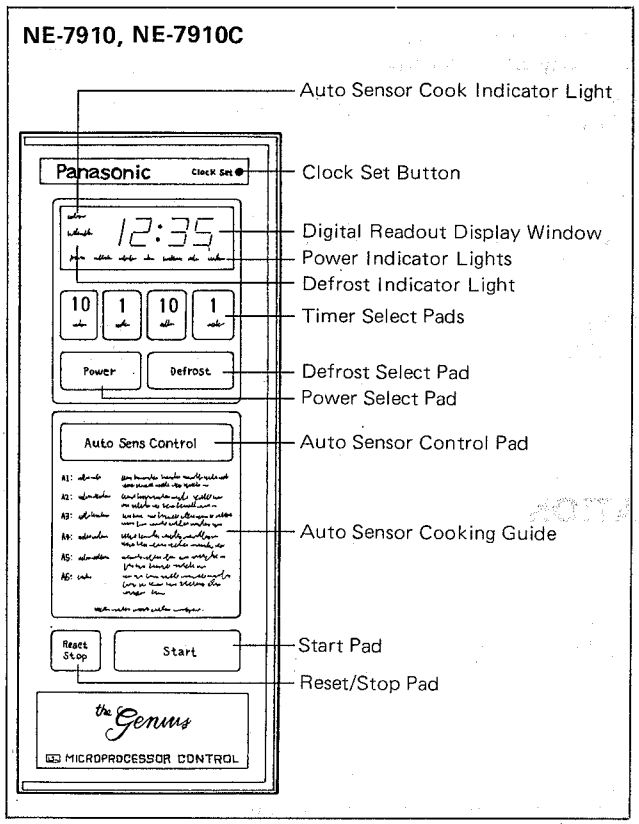


(Fig. 1)

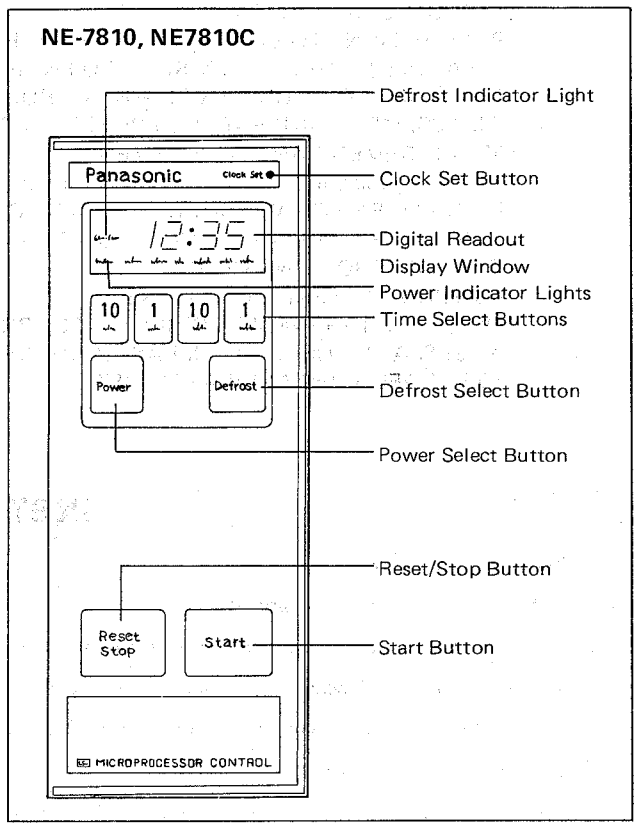
NOTE When any reference is made to pads or auto sensor cooking, we are speaking of NE-7910, NE-7910C.
When any reference is made to buttons, we are speaking of NE-7810, NE-7810C.

CONTROL PANEL

NOTE Models NE-7910 and NE-7910C are provided with a capacitive touch control panel. A push button switch control panel is used for models NE-7810 and NE-7810C.



(Fig. 2)



(Fig. 3)

NOTE When the oven is first plugged in, the reset pad (reset button) should be tapped to clear the display window or indicator lights.

NOTE If abnormal figures appear in the display window (Example "F9 3F") correct by removing the plug from wall receptacle, wait 10 seconds, then reinsert the plug.

These abnormal figures may appear because of a temporary power failure or if the plug is removed and reinserted without waiting 10 seconds.

CONTROL

A touch control is used for NE-7910, NE-7910C and a switch button control is used for NE-7810, NE-7810C.

CLOCK SET

Push Clock Set Button. The Display Window will show 00:00 and the colon will blink. Enter the time of the day (TOD) by tapping the appropriate number pads.

Example: If it is 10:25 (a.m. or p.m.), tap 10 min. pad once, 10 sec. pad twice and 1 sec. pad 5 times. The Display Window will show 10:25 with the colon blinking. Push the clock set button again. The colon stops blinking. The clock is set and will keep the time of day as long as the cord is plugged in.

TOUCH SOUND

When a correct Button is pushed one beep sound is heard. If a pad is tapped and no beep sound is heard the unit has not or cannot accept the instruction. At anytime the oven completes cooking and turns off, 5 beep sounds will be heard.

POWER PAD

One tap	: HIGH	power	Four taps	: M. LOW	power
Two taps	: M. HIGH	power	Five taps	: LOW	power
Three taps	: MEDIUM	power	Six taps	: WARM	power

NOTE The following selections for 2-phase program cooking are available.

* The same power in succession
  i.e. HIGH – HIGH
* Any power to Defrost
  i.e. HIGH – DEFROST
* DEFROST – DEFROST
* AUTO SENSOR to any power

TIMER PAD (Example) 18 min. 45 sec.

10 min. pad:	One tap	10 sec. pad:	Four taps
1 min. pad:	Eight taps	1 sec. pad:	Five taps

DEFROST PAD

When Defrost is selected the cycle will also program an automatic stand time equal to defrost time.

RESET/STOP PAD

Before cooking	:	One tap clears instructions.
During cooking	:	One tap temporarily stops the cooking progress.
		Another tap cancels all programs and TOD reappears in the Display Window.

OPENING DOOR

Opening the door during cooking will stop the cooking process without cancelling program. Cooking resumes as soon as the door is closed and START pad is tapped.

AUTO SENSOR CONTROL PAD FOR NE-7910, NE-7910C

One tap	: AUTO 1	Four taps	: AUTO 4
Two taps	: AUTO 2	Five taps	: AUTO 5
Three taps	: AUTO 3	Six taps	: AUTO 6

OPERATION PROCEDURE

SUMMARIZED DIRECTIONS

NE-7910, NE-7910C / NE-7810, NE-7810C		
TIME COOKING		AUTO SENSOR COOKING
One-Phase cooking	Two-Phase cooking	
1. Set Power. 2. Set Time. 3. Tap START Pad.	1. Set Power. 2. Set Time. 3. Set second Power. 4. Set second Time 5. Tap START pad	1. Set Auto Sensor Control (A1 . . . . . A6) 2. Touch START pad
Defrost Cycle	Defrost-to-Cook Cycle	
1. Tap DEFROST pad. 2. Set Time. 3. Tap START pad.	1. Tap DEFROST pad. 2. Set Time. 3. Set second Power. 4. Set second Time. 5. Tap START pad.	

(Fig. 4)

TIME COOKING

ONE-PHASE COOKING

Step 1. Set cooking power by tapping the power pad, the appropriate number of times.

Example: Tap Power Pad twice for M. High.

– TOD and colon disappear, zeroes (00 00) appear in the Display Window. Indicator Light appears above the power selected.

Step 2. Set cooking time by tapping the appropriate time pads.

Example: To set 15 minutes and 30 seconds, tap 10 min. pad once, 1 min. pad 5 times, 10 sec. tap 3 times.

– The cooking time appears in the Display Window.

Step 3. Tap START pad.

– Microwave activity starts. Power Indicator light blinks.
Turntable begins to rotate. Oven lamp turns on and cooking time begins to count down.

– When cooking time has elapsed, oven beeps and turns off automatically. Microwave activity stops and power indicator light and oven lamp turn off. Turntable stops. TOD reappears in the display window.

DEFROST

Step 1. Tap DEFROST pad.

– TOD and colon disappear. zeroes (00 00) appear in the Display Window. Defrost Indicator Light appears.

Step 2. Set defrost time by tapping Time pads. (Refer to Step 2 under One-Phase Cooking.)

– The defrost time appears in the Display Window.

Step 3. Tap START pad.

– Microwave activity starts. Oven lamp turns on and Defrost Indicator Light blinks. Turntable begins to rotate. Defrost time begins to count down.

– When the defrost time counts down to "0", the defrost time reappears in the Display Window. Defrost Indicator Light stops blinking. Microwave activity stops and oven begins stand time.

– When the stand time displayed counts down to "0", the oven beeps and turns off automatically. Oven lamp and Defrost Indicator Light turn off. Turntable stops. TOD reappears in the display window.

TWO-PHASE PROGRAMMED COOKING

Step 1. Set first phase cooking power by tapping the power pad. (Refer to Step 1 under One-Phase Cooking.)

– TOD and colon disappear. Zeroes (00 00) appear in the Display Window. Indicator light appears above the power selected.

Step 2. Set first phase cooking time by tapping the appropriate Time pads. (Refer to Step 1 under One-Phase cooking)

– First phase cooking time appears in the Display Window.

Step 3. Set second phase cooking power by tapping the Power pad.

– First phase time disappears. Zeroes (00 00) appear in the Display Window.

– Second phase cooking power indicator light appears above the power selected

Step 4. Set second phase cooking time by tapping the appropriate Time pads.

– Second phase cooking time appears in the Display Window.

Step 5. Touch START pad.

– Second phase cooking time disappears and first phase cooking time reappears in the display window and begins to count down. Second phase Power Indicator Light switches to the first phase power and the indicator light blinks. Oven lamp turns on. Turntable rotates. Microwave activity begins.

– When the first phase cooking time has elapsed, second phase cooking time reappears in the Display Window and begins to count down. Power Indicator Light shifts to second phase cooking power Indicator Light and blinks.

– When second phase cooking time has elapsed, beep sounds and oven turns off automatically. Oven lamp and Power Indicator Light turn off. Turntable stops. TOD reappears in the Display Window.

DEFROST-TO-POWER PROGRAMMED COOKING

Step 1. Tap DEFROST Pad.

– TOD and colon disappear. Zeroes (00 00) and Defrost Indicator Light appears in the Display Window.

Step 2. Set defrost time by tapping the appropriate Time pads.

– Defrost time appears in the Display Window.

Step 3. Set cooking power by tapping the Power pad.

– Defrost Indicator Light disappears. Defrost time disappears. Zeroes (00 00) appear in the Display Window. Power Indicator Light selected turns ON.

Step 4. Set cooking time by tapping the appropriate Time pads.

– Cooking time appears in the Display Window.

Step 5. Touch START pad.

– Cooking time disappears and defrost time reappears and begins to count down. Cooking Indicator Light turns off. Defrost Indicator Light turns on and blinks. Oven lamp turns on. Turntable rotates. Microwave activity starts.

– When defrost time has elapsed, microwave activity stops, Defrost Indicator Light stops blinking. The defrost time reappears in the Display Window and begins to count down as standing time.

– When stand time has elapsed, cook time appears in the Display Window. Defrost indicator light turns off. Power Indicator Light turns on and blinks. Cooking time begins to count down. Microwave activity begins.

– When cooking time has elapsed, beep sounds. Cooking indicator and oven lamp turn off. Turntable stops. Microwave activity stops. TOD reappears in the Display Window.

AUTO SENSOR COOKING ONLY ON MODELS NE-7910 AND NE-7910C

AUTO SENSOR COOK

Step 1. Put food into oven.

NOTE For best cooking results, be sure to wrap food in a cooking bag, cover tightly with plastic wrap or glass lid.

Step 2. Set the appropriate Auto Program by tapping Auto Sensor Control Pad until desired program appears in the display window

One tap. A1	Four taps. A4
Two taps A2	Five taps A5
Three taps A3	Six taps. A6

– TOD and colon disappear. The selected Auto Program appears in the Display Window. Auto indicator light turns on.

Step 3. Touch START pad.

– Oven lamp turns on and Auto Indicator Light begins to blink.
Turntable rotates. Microwave activity starts.

– When Auto Sensor program level disappears, a time will appear in the Display Window indicating the remainder of the cooking time.

– When the ovens' built in auto sensor detects steam coming out from the food, the micro-computer calculates the balance of the cooking time. The displayed auto program indication (A2, for example) disappears and the remaining cooking time automatically appears in the display window and starts to count down.

– When the time displayed counts down to 0, the beep sounds and the oven turns off automatically. Microwave activity stops and the oven lamp and auto indicator light turn off. Turntable stops. The display window indicates the TOD.

NOTE A remainder of calculated cooking time appears only with the A2 to A6 settings. With A1 setting, the oven will shut off immediately when the auto sensor detects steam from the food.

NOTE When the oven calculates the balance of cooking time to be over 60 minutes, the time will appear as hours and minutes.

Example: If the time should be 94 minutes, the Display Window will show 1 H 34. The seconds will not visibly count down in the Display Window until the 34 minutes has elapsed and only 60 minutes remain. At that time the unit will again show minutes and seconds. Seconds will now visibly count down.

IMPORTANT

1. Do not interrupt the auto sensor cooking cycle until time appears in the display window.
2. All foods must be at refrigerator temperature (38° ~ 42°F) for auto sensor cooking.
3. Before using auto sensor feature, make sure glass tray in the oven is dry to assure best auto cooking results.
4. Room temperature or heat surrounding the oven should not be above 95°F (35°C) when using the auto sensor cooking cycle. Inaccurate cooking may result.
5. Foods less than 3 or 4 ounces should be cooked by power and time, not by the auto sensor cooking cycle.

AUTO COOK TO WARM CYCLE

Step 1. Put food into oven.

– See NOTE Under Step 1 in Auto Sensor Cooking.

Step 2. Set the appropriate Auto Program by tapping Auto Sensor Control pad.

– TOD and colon disappear. The selected Auto Program, A2 for example, appears in the Display Window. Auto Indicator Light turns on.

Step 3. Set Warm Power by tapping Power pad 6 times.

– Auto Program indication (A2, for example) disappears. Auto Indicator Light goes off and Warm power indicator light turns on.

Step 4. Set Warming time by tapping Time pads.

– Warming time selected appears in the display window.

Step 5. Touch Start pad.

– Warm power Indicator Light goes off and Auto Indicator Light turns on and blinks. Warming time disappears and Auto Program (A2, for example) reappears. Oven lamp turns on. Turntable rotates. Microwave activity begins.

– When Auto Sensor Cooking is over, Auto Indicator Light turns off, Warm power Indicator Light comes on and blinks. Warming time appears in the display window and begins to count down.

– When warming time has elapsed the oven beeps and shuts off automatically. Microwave activity stops. Turntable stops. Oven lamp turns off and TOD reappears in the display window.

TIME/DELAY START

TIMER This models' digital display window can be used as a timer in the following manner:

Step 1. Set the desired time by tapping Time pads.

– TOD AND colon disappear and the selected time appears in the Display Window.

Step 2. Touch START pad.

– The time displayed simply counts down, as a digital timer would. No microwave activity begins. Turntable does not rotate. No lights appear.

– When time has elapsed, oven beeps. TOD reappears in the Display Window.

DELAY START This oven can delay the start of any cooking function by up to 99 minutes and 99 seconds.

Step 1. Set the length of time you would like to delay the start of cooking, defrosting, or auto sensor cooking.

– TOD and colon disappear and the delay time selected appears in the Dispay Window.

Step 2. Set Power and time for Cook, or Defrost, or Select Auto Sensor Control for Auto Cooking cycle.

NOTE It is not possible to use the delay feature for 2 phase cooking. For example Delay-Auto Cook-Warm cycle. In other words the three stage program cannot be accepted. "E" indicating error will appear in the display window, if these selections are chosen.

Step 3. Touch START pad.

– 2nd phase cooking selection disappears and the delay time reappears in the Display Window and starts to count down. No microwave activity begins. Turntable does not rotate. No lights appear.

– When delay time has elapsed, oven automatically enters second programmed cycle.

– When cooking cycle is over, oven lamp and the power indicator light turn off. Turntable stops. TOD reappears in the Display Window.

CHECKING PROCEDURE ON OPERATION

Instructions relating to Auto Sensor Cooking are only for NE-7910, NE-7910C.

1. If "E" indication appears in the Display Window:

You might have given wrong instruction. Touch "RESET" pad to clear and give new instructions from the beginning.

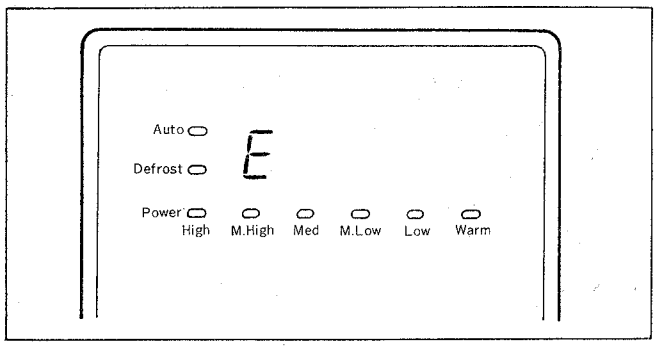
"E", indicating ERROR, appears under following conditions.

- When Auto Sensor Cooking is selected after Power/Time cooking is selected.
- When Auto Sensor Cooking is selected after Defrost/Time is selected.

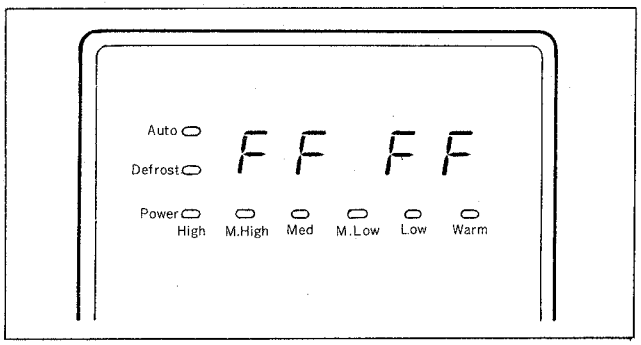
- When Defrost is selected after Auto Sensor Cooking is selected.
- When 3rd stage cooking is selected.
- When clock is set later than 12:59 or at impossible time like 00:73 or 83:25.

Touch RESET Pad to clear "E" from Display Window and enter correct instructions.

2. If Auto Sensor Control should not work properly, oven is designed to shut off automatically 60 minutes after operation begins and to show "FFFF" in the Display Window. Touch RESET pad and complete the cooking by power and time. If auto sensor control is open the oven will shut off automatically approximately 15 seconds.



(Fig. 5)



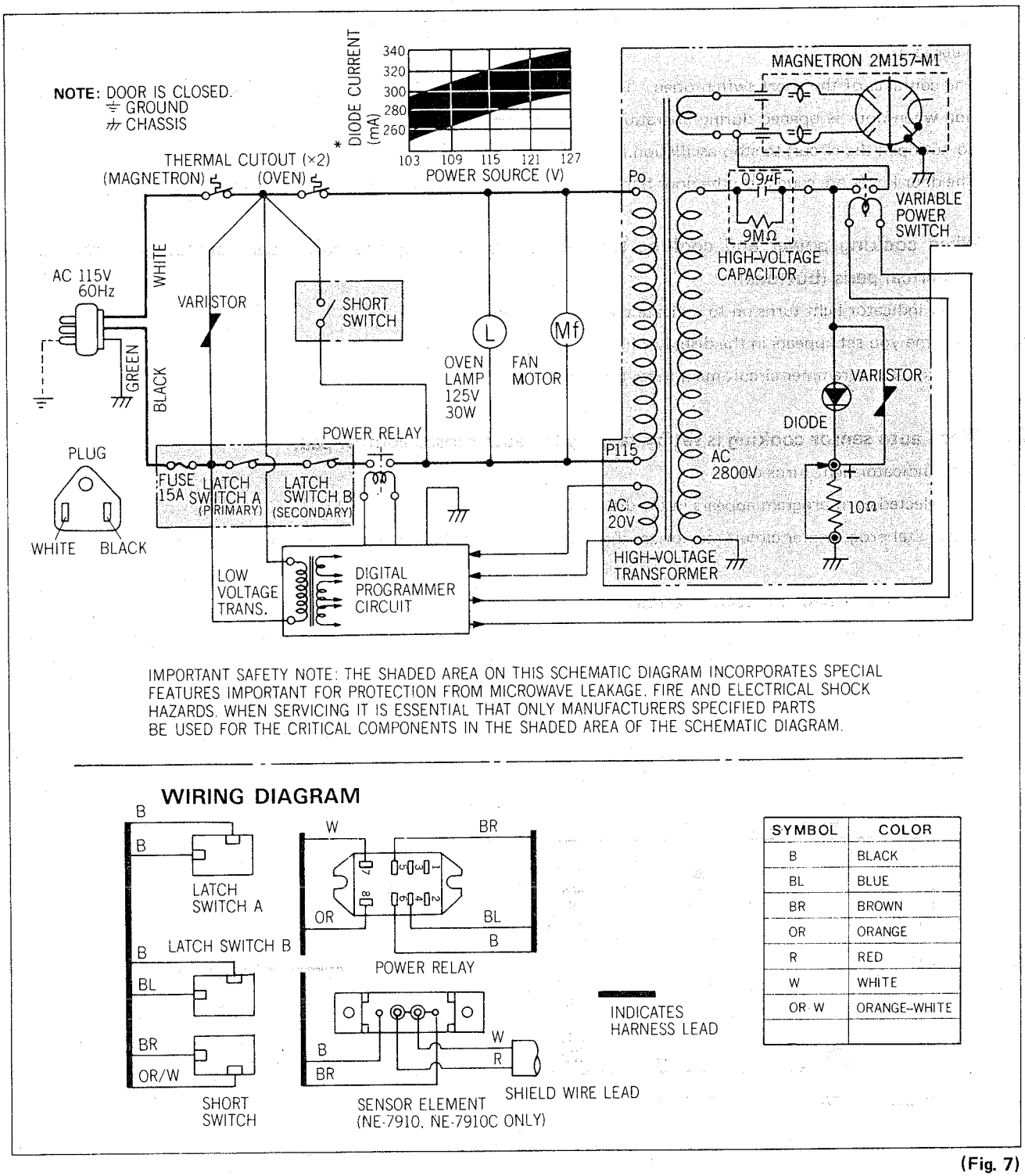
(Fig. 6)

CAUTION WHEN USING

1. Do not use metalware
   In rare cases where you must use metal materials such as foil or skewers, etc., take care not to have the edge of the metal material touch the inner glass screen, or the oven walls (coated steel), because the glass plate may be broken the coated part may be burned by sparking.
2. Always keep the glass cooking tray clean
   Do not cook foods with a high fat or sugar content directly on the glass tray.
3. Do not dry clothes in the microwave oven.
4. Avoid using wooden containers for more than a few seconds.
5. Do not operate the oven with a kitchen towel or a napkin left between the door and the front wall of the oven.
6. Do not press the cook button when the oven is empty.
7. Keep the inside of the oven clean.
8. Avoid cooking a small-volume of food for a long period of time.
9. If any visible steam or moisture is found on or around the door just wipe it off. There is no need for concern and this never causes any microwave leakage.
10. Cautions when operating the control panel.
    A. Do not touch control pads with water or oil on your finger.
       When the control panel is dirty, wipe with a damp cloth first and then finish with a soft dry cloth. Do not use harsh detergents or abrasives.
    B. Do not try to touch the pads while wearing gloves or while holding any insulating materials.
    C. For most accurate programming of the unit, tap the center of each pad or push the center of each button firmly.
    D. Do not hit or strike the control panel since this is made of glass and may be broken.
11. When removing the roller-ring from turntable for cleaning, be sure to re-install into the proper position. Avoid exposing your watch to the magnetic-capsules located on the bottom of the turntable, or your watch may be damaged.
12. When power select is set at a setting other than High, the intensity of the oven lamp will vary. This is normal and indicates that the oven is operating normally.

SCHEMATIC DIAGRAM

The figure below shows the schematic diagram for model NE-7910, NE-7910C, NE-7810 and NE-7810C.



IMPORTANT SAFETY NOTE: THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM MICROWAVE LEAKAGE, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREA OF THE SCHEMATIC DIAGRAM.

WIRING DIAGRAM

SYMBOL	COLOR
B	BLACK
BL	BLUE
BR	BROWN
OR	ORANGE
R	RED
W	WHITE
OR·W	ORANGE-WHITE

(Fig. 7)

NOTE When reference is made to pads or auto sensor cooking, we are speaking of NE-7910, NE-7910C.
When reference is made to buttons, we are speaking of NE-7810, NE-7810C.

CIRCUIT DESCRIPTION

Refer to the schematic diagram on page 11.

1. When the food is placed inside the oven and door is closed.

(A) The low voltage transformer supplies the necessary voltage to the digital programmer circuit when power cord is plugged in.

(B) The contacts of the short switch open. This switch creates short circuit to blow 15 A fuse and stop magnetron oscillation when door is opened during operation under abnormal condition, (i.e. both the contacts of latch switch A and B do not open the circuit to stop oscillation.)

(C) The door keyes are caught by the door hooks, the contacts of latch switch A and B close the primary circuit.

2. When cooking power and cooking time are set by tapping the power pad (button) and the desired numerical pads (buttons).

(A) Power indicator light turns on to indicate that power has been set.

(B) The time you set appears in the display window.

(C) The digital programmer circuit memorizes the functions set.

2' When auto sensor cooking is set by tapping the auto sensor control pad.

(A) Auto indicator light turns on.

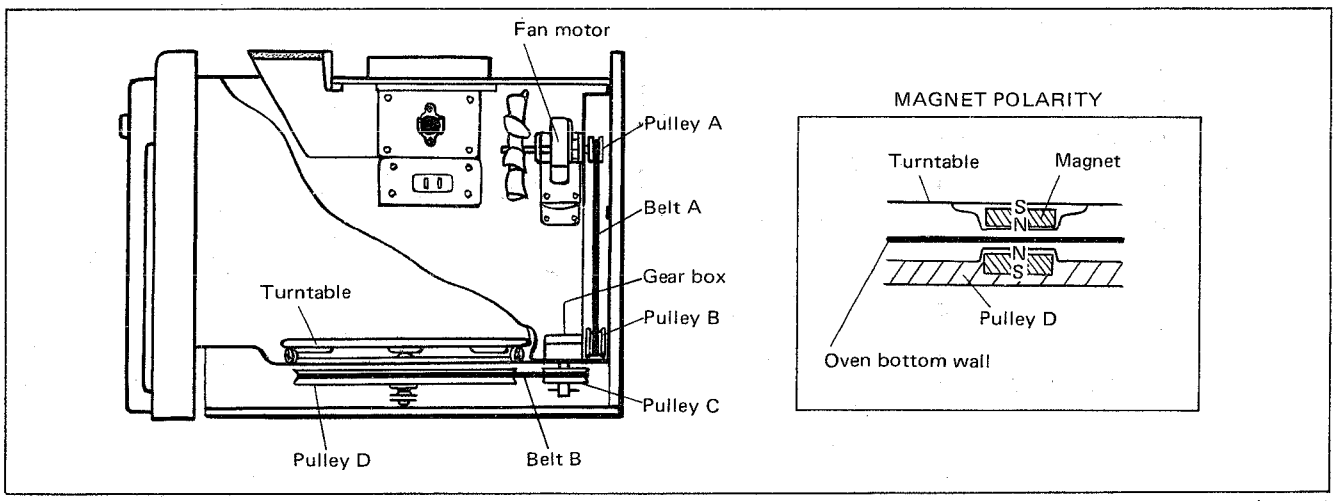
(B) The selected auto program appears in the display window.

(C) The digital programmer circuit memorizes the information that the auto sensor cooking has been set.

3. When the start pad (button) is tapped.

(A) 115V A.C. is applied to the high voltage transformer through power relay which is energized by the digital programmer circuit.

(B) Fan motor starts rotating and cools the magnetron by blowing the air coming from the intake on the back panel over the magnetron fins. Also the fan motor drives the turntable by means of gears, belts and pulleys for uniform cooking. (See fig. 8)



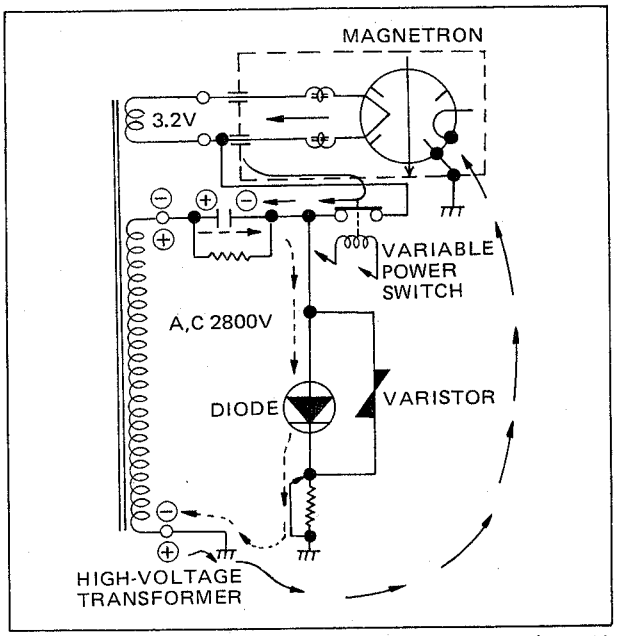
(Fig. 8)

(C) The oven lamp turns on.

(D) Power (or defrost, auto indicator) indicator light selected starts blinking to indicate magnetron oscillation.

(E) 20V A.C. is supplied to the digital programmer circuit from the high voltage transformer.

(F) 3.2 volts AC is generated from the filament winding of the high voltage transformer. This 3.2 volts is applied to the magnetron to heat the magnetron filament through two noise preventing choke coils.



(Fig. 9)

(G) A high voltage of 2,800 volts AC is generated in the secondary of the high voltage transformer and this secondary voltage is increased by the action of the diode and the charging of the high voltage capacitor. This resultant DC voltage is then applied to the anode of the magnetron. As shown in fig. 9, the first half cycle of the high voltage produced in the high voltage transformer secondry charges the high voltage capacitor.
Current flow is in the direction of the dotted-line ------→.
During the second half cycle, the voltage produced by the transformer secondary, and the charge of the high voltage capacitor are combined and applied to the magnetron as shown by the solid-line ——→ so that oscillation begin.
The disturbance wave generated by the magnetron is prevented by the choke coils of 1.6μH, filter capacitors of 500pF and the magnetron's shielded case so that TV and radio programs are not impaired by noise.

(H) The coil of variable power switch is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of the variable power switch contacts in order to vary the output power of the microwave oven from "warm" to "high" power. One complete ON and OFF cycle of the variable power switch is 22 seconds.
The relation between indications on the control panel and the output of the microwave oven is as follows:

INDICATION	OUTPUT POWER AGAINST HIGH POWER	ON, OFF TIME ON VARIABLE POWER SWITCH
High	22 / 22 (100%)	22(S) ON, 22(S) ON
M. High	20 / 22 (91%)	20(S) ON, OFF, ON, OFF
Med	15 / 22 (68%)	15(S) ON, OFF, ON, OFF
M. Low	11 / 22 (50%)	11(S) ON, OFF, ON, OFF
Low	6 / 22 (27%)	6(S) ON, OFF, ON, OFF
Warm	2 / 22 (10%)	2(S) ON, OFF, ON, OFF
Defrost	7 / 22 (32%)	7(S) ON, OFF, ON, OFF

(Fig. 10)

(I) The cooking time shown in the display starts to count down.

4. When the door is opened during cooking.

(A) Latch switch A (primary) and latch switch B (secondary) open to cut off the primary voltage to the high voltage transformer to stop microwave oscillation.

(B) Power indicator (or auto, defrost indicator) light stops blinking and display stops counting down.

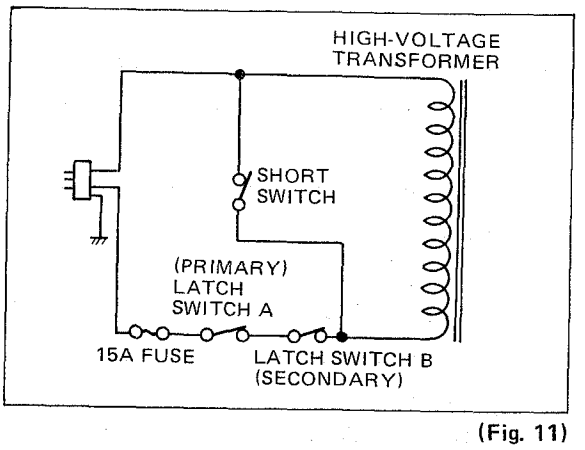
(C) Power relay stops functioning.

(D) Oven lamp turns off.

(E) Fan motor and turntable stop rotating.

(F) As soon as the door handle button is pressed, the short switch contacts close and create the short circuit.

(G) If the contacts of latch switch A and the contacts of latch switch B both malfunction, the 15A fuse blows open due to the large current surge caused by the short switch activation, and this in turn stops magnetron oscillation.



(Fig. 11)

5. When the reset/stop pad (button) is tapped once during cooking.

(A) The digital programmer circuit cuts the D.C. voltage being supplied to the power relay coil causing the magnetron to stop oscillation.

(B) Power indicator (or auto, defrost indicator) light stops blinking and stays on.

(C) Oven lamp turns off.

(D) Fan motor and turntable stop rotating.

NOTE At this moment, the oven is in "hold" condition and when the start pad (button) is tapped again, the oven starts to operate as originally programmed.

6. When the reset/stop pad (button) is tapped twice during cooking.

(A) The digital programmer circuit cancels all instructions you gave.

(B) Power relay stops functioning to stop the magnetron oscillation.

(C) Power indicator (or auto, defrost indicator) light turns off and the display window shows the TOD.

(D) Oven lamp turns off.

(E) Fan motor and turntable stop rotating.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.

(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:

(1) Interlock operation

(2) Proper door closing

(3) Seal and sealing surfaces (arcing, wear, and other damage)

(4) Damage to or loosening of hinges and latches

(5) Evidence of dropping or abuse

(C) Before turning on microwave power for any service test or inspection within the microwave generating comparments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity and connections.

(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

(E) A microwave leakage check to verify compliance with the Federal performance standard should be performed on each oven prior to release to the owner.

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

WARNING

PACEMAKER WEARERS MUST CONSULT THEIR PHYSICIAN BEFORE ATTEMPTING SERVICE.

CAUTION

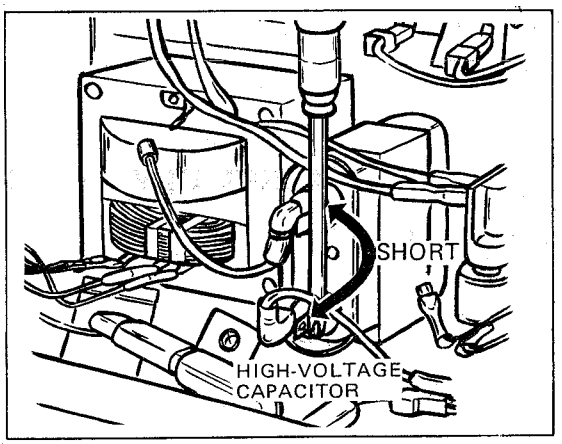
SERVICEMEN SHOULD REMOVE THEIR WATCHES WHENEVER WORKING CLOSE TO OR REPLACING THE MAGNETRON.

1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

2. Warning about the electric charge in the high voltage capacitor

For about 30 seconds after the oven stops, an electric charge remains in the high voltage capacitor. When replacing or checking parts, short between capacitor terminals by an insulated screw driver to discharge. See figure 12.



(Fig. 12)

WARNING

THERE IS HIGH-VOLTAGE PRESENT, WITH HIGH-CURRENT CAPABILITIES IN THE CIRCUITS OF THE HIGH VOLTAGE TRANSFORMER SECONDARY AND FILAMENT TRANSFORMER SECONDARY. IT IS EXTREMELY DANGEROUS TO WORK ON OR NEAR THESE CIRCUITS WITH THE OVEN ENERGIZED.

WARNING

NEVER TOUCH ANY CIRCUIT WIRING WITH YOUR HAND OR INSULATED TOOL DURING OPERATION.

WARNING

DO NOT TOUCH ANY PART OF THE CIRCUITRY ON THE DIGITAL PROGRAMMER CIRCUIT, SINCE A STATIC ELECTRIC DISCHARGE MAY DAMAGE THIS CONTROL PANEL.

DO NOT TOUCH FILTER CAPACITOR ON THE TOUCH CONTROL CIRCUIT. THERE IS 50 VOLTS OR MORE PRESENT, WHILE POWER SUPPLY CORD IS PLUGGING IN.

3. When parts must be replaced, remove the power plug from the outlet.

4. When the 15 Amp fuse is blown due to the operation of short switch:

(A) Replace the latch switch A (primary), latch switch B (secondary) and short switch. This is mandatory. Refer to pages 21 and 22 for the necessary adjustments for these switches.

(B) When replacing the fuse, confirm that it has the appropriate rating for this model.

5. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

6. Pacemaker wearers should consult their physician before attempting to service or repair a microwave oven. For additional information on this subject, write to: the manufacturer of your pacemaker.

7. Confirm after repair

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing. Microwaves might leak if screws are not properly tightened.

(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.

(C) Check for radiation leakage. (Refer to procedure for measuring radiation leakage on pages 23, 24 & 25.

DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

1. Removal of outer panel

Remove the seven screws from the front section and the seven screws from the rear section. The outer panel can now be lifted off.

2. Replacement of the magnetron for NE-7910, NE-7910C, NE-7810 and NE-7810C

CAUTION

SERVICEMEN SHOULD REMOVE THEIR WATCHES WHENEVER WORKING CLOSE TO OR REPAIRING THE MAGNETRON

* Remove the magnetron with the shielded case, permanent magnet, choke coils and 500pF capacitors because they are one assembly.

(A) Discharge the high voltage capacitor, (See page 15)

(B) Remove air guide A by removing the 2 screws holding it to the oven cavity.

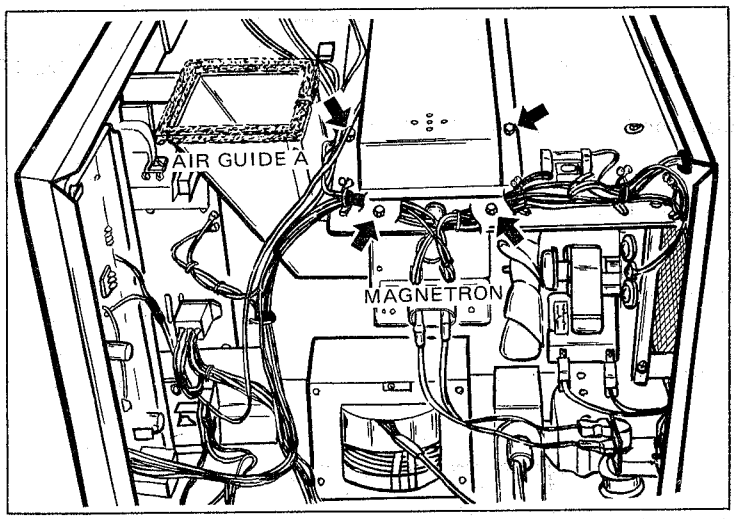
(C) Remove two high voltage leads from filament terminals.

(D) Remove two screws holding thermal cutout to magnetron.

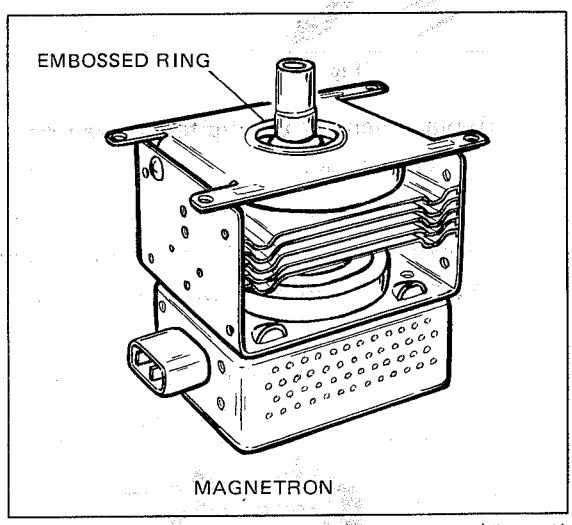
(E) Remove four screws holding the magnetron to waveguide.

NOTE A Make sure that the embossed ring is rigidly attached on the magnetron anode, (Fig. 14)

B To prevent microwave leakage, tighten the mounting screws properly making sure there in no gap between the waveguide and the magnetron.



(Fig. 13)



(Fig. 14)

3. Replacement of the digital programmer circuit for NE-7910 and NE-7910C

NOTE Be sure to ground any static electric charge in your body before handling the digital programmer circuit.

(A) Disconnect 10-pin connector and 2-pin connector.

(B) Unsolder four lead wires connected to terminals on the humidity sensor and remove two screws holding humidity sensor to the oven cavity. (See fig. 16)

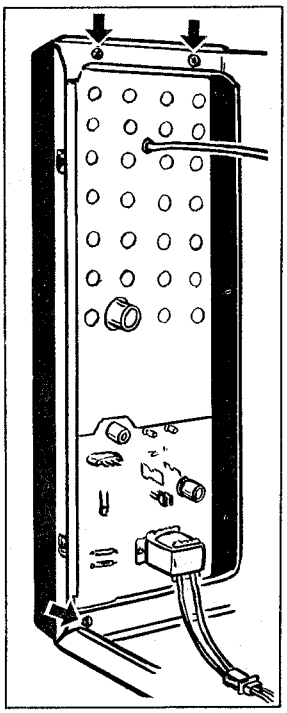
NOTE A When replacing the digital programmer circuit, you must unsolder the two wires from the humidity sensor. Never unsolder the wires from the digital programmer circuit board itself.

B When reconnecting the two wires to the humidity sensor, follow the wiring of the sensor on page 11 of this service manual.

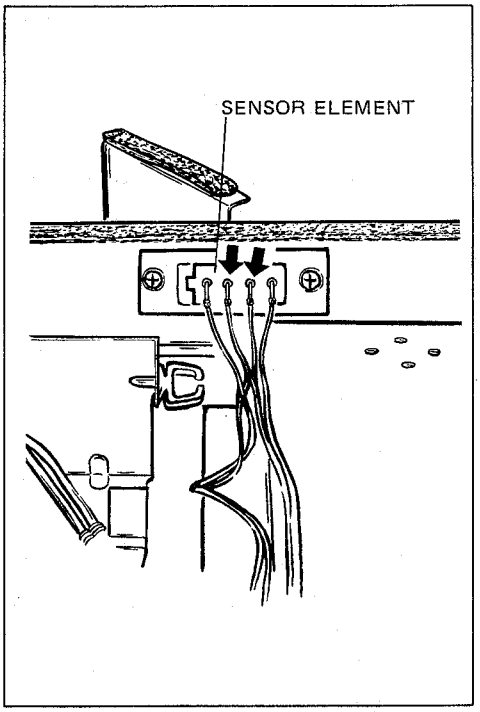
(C) Remove three screws holding the digital programmer circuit to the escutcheon base. (See fig. 15)

(D) Remove 8 screws holding the digital programmer circuit to the escutcheon base. (See fig. 17)

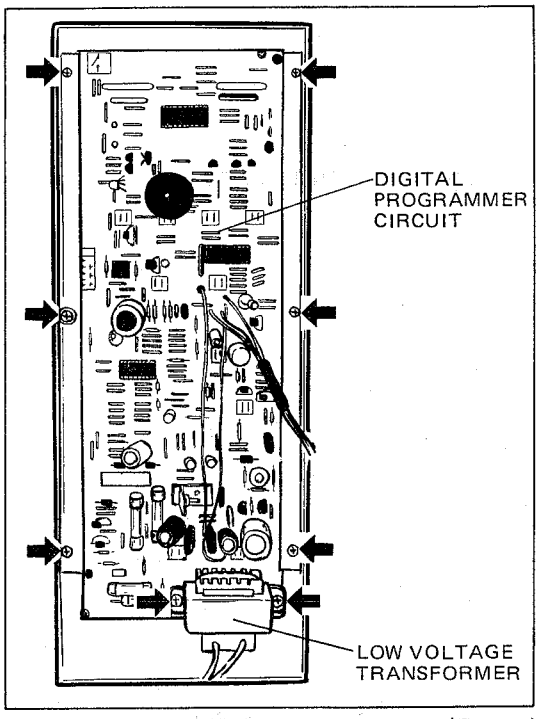
NOTE A Remove two screws holding the low voltage transformer to new P.C.B. before installing the new one to escutcheon base.



(Fig. 15)



(Fig. 16)



(Fig. 17)

4. Replacement of the digital programmer circuit for NE-7810 and NE-7810C

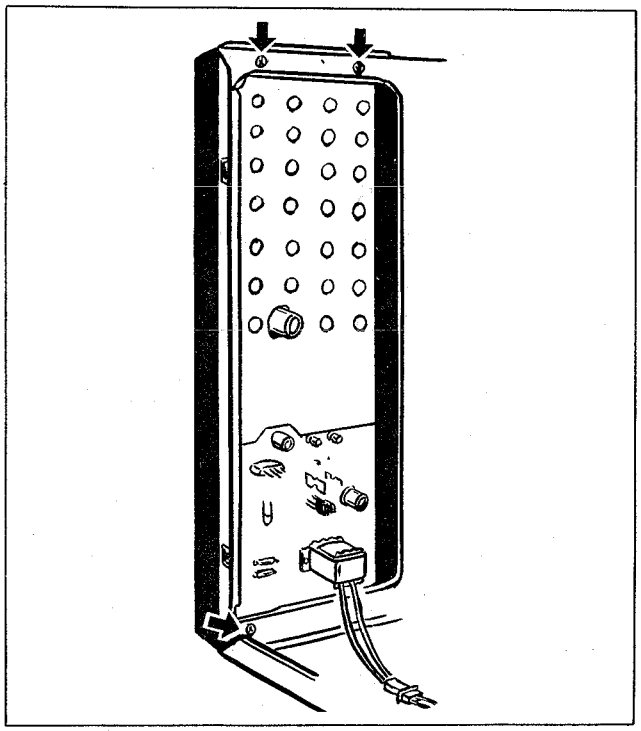
(A) Remove two connectors.

(B) Remove two screws holding the escutcheon base with the digital programmer circuit.

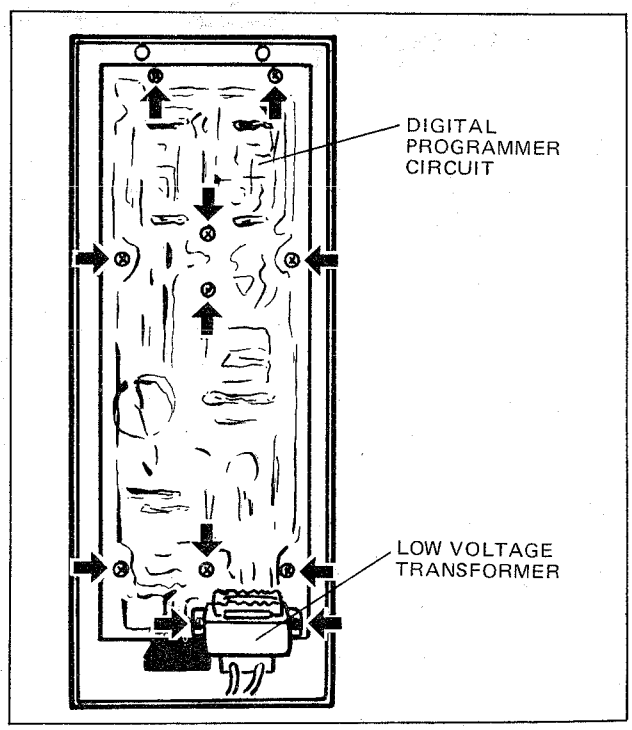
(C) Remove eleven screws holding the digital programmer circuit to the escutcheon base.

NOTE A Remove two screws holding the low voltage transformer to new P.C.B. before installing the new one to escutcheon.

B When connecting 2-pin connector, orange lead wire will be connected to black lead wire and black to orange. This is normal.



(Fig. 18)



(Fig. 19)

5. Replacement of the fan motor assembly.

(A) Remove the variable power switch and the high voltage capacitor.

(B) Remove the rubber belt from pulley C and put it on the base with the other end of belt being caught on pulley D.

(C) Remove 5 screws holding fan motor bracket.

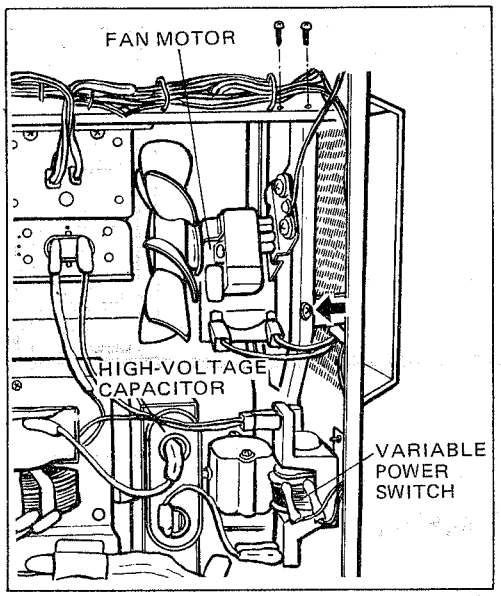
(D) Pull the fan motor with the bracket and gear box toward you.

(E) Remove the belt from fan motor's pulley.

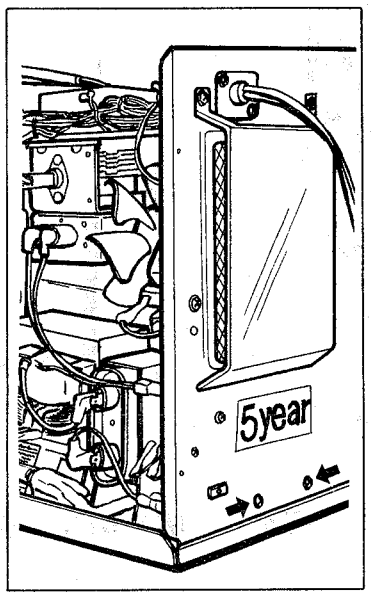
(F) Remove three screws holding the fan motor assembly.

(G) Remove the wire pin to remove pulley.

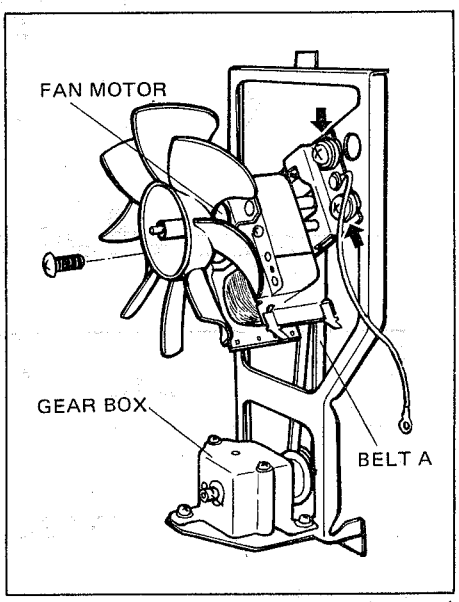
NOTE When installing the pulley A to shaft of fan motor, the pulley A should be positioned on the hole at shaft end and be fixed by wire pin. Otherwise the belt may be detached from the pulley while operating.



(Fig. 20)



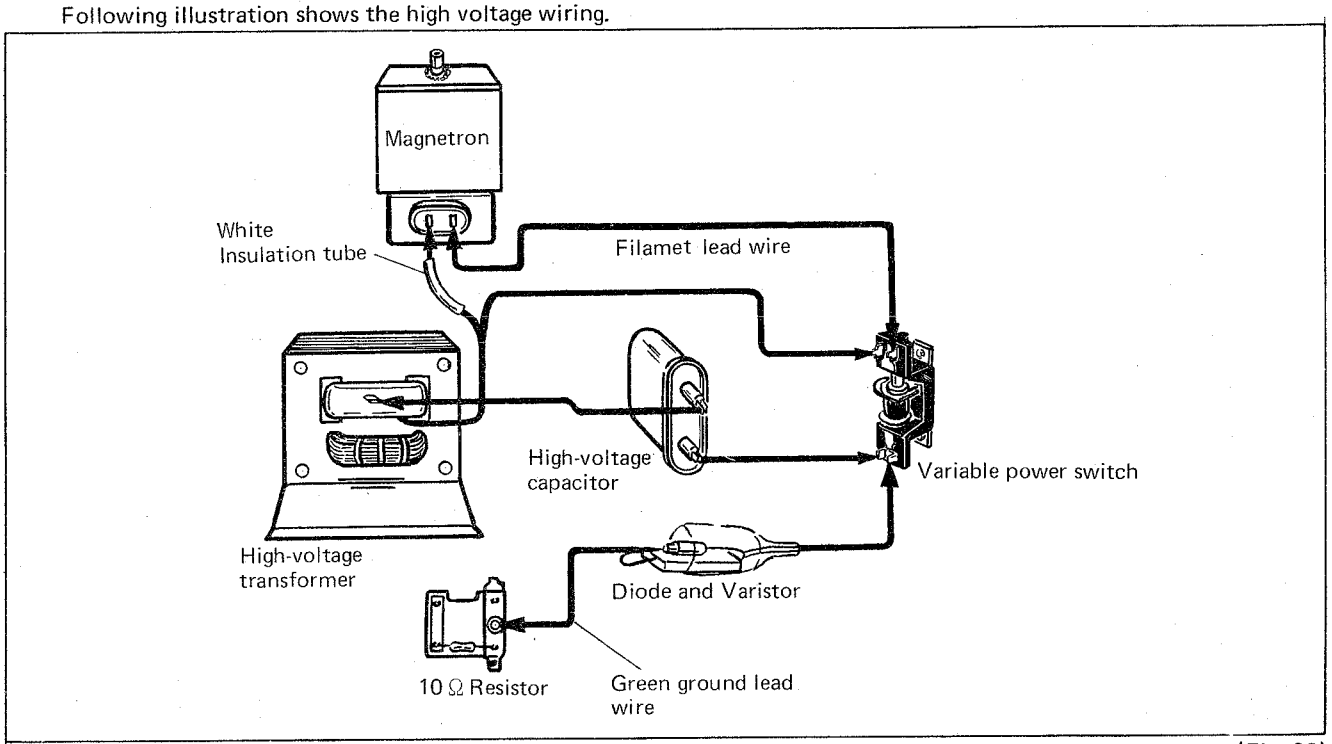
(Fig. 21)



(Fig. 22)

6. High voltage circuit wiring.

Following illustration shows the high voltage wiring.



(Fig. 23)

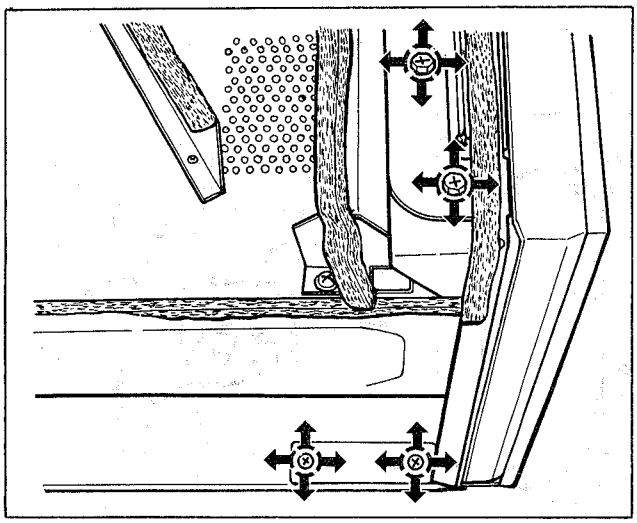
7. Replacement of the door assembly.

(A) Remove the 4 bolts holding the upper hinge and lower hinge to the oven assembly.

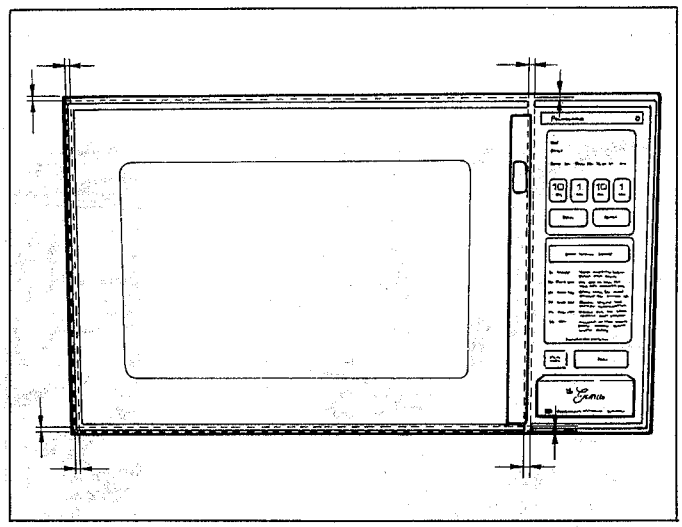
(B) Open the door and while pulling the door toward you, work the upper hinge out through the hole in the oven assembly. The door will be simply lifted off the bottom hinge pin at the same time.

(C) When mounting the door assembly to the oven assembly, be sure to adjust the door assembly parallel to the sash by moving the upper hinge and lower hinge according to the directions in fig. 24. Also adjust so that the door has no play between the inner door surface and oven frame assembly.

If the door assembly is not mounted properly, microwaves may leak from the clearance between the door and the oven.



(Fig. 24)



(Fig. 25)

MEASUREMENT AND ADJUSTMENT

NOTE Please note on models NE-7910, NE-7910C, NE-7810 and NE-7810C, test DIODE CURRENT not ANODE CURRENT.

NOTE When you measure diode current because of a no oscillation complaint, check the diode first. If the diode is shorted, do not measure the diode current. Otherwise 10Ω resistor will be burnt by AC current.

1. Measurement and adjustment of the diode current

After replacement of the high voltage transformer, high voltage capacitor or the magnetron, measure the diode current of the magneton according to the following procedures.

(A) To measure the diode current of the magnetron, do not use an ammeter, use the DC 5V or DC 10V range of a voltmeter.

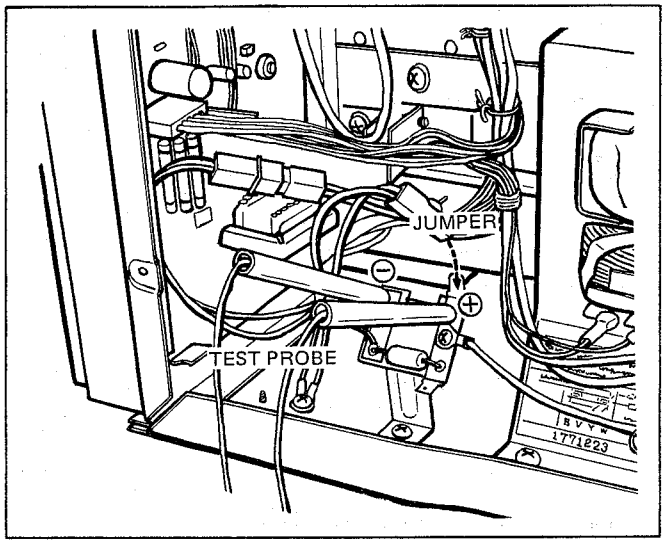
(B) As shown in fig. 26 remove the jumper connected to the ⊕ side of the 10Ω resistor, insert the meter probes into both resistor terminal holes being careful to observe the correct polarity, and press the cook start button. After taking the measurement, reconnect the jumper to the ⊕ side of the 10Ω resistor.

(C) To determine the diode current, use this formula:

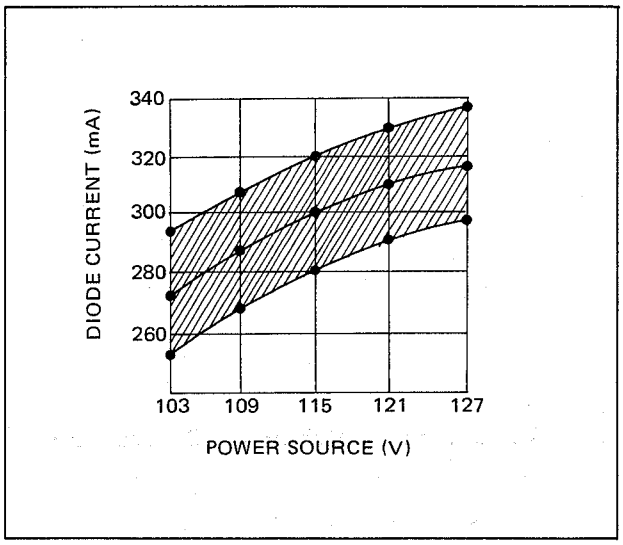
$$\text{Diode Current (mA)} = \frac{\text{Meter indicated voltage (V)}}{10\ (\Omega)} \times 1000$$

(D) Diode current, under normal conditions, is 300±20mA with the power on the "High" power selection. But it may change, as shown in fig. 27 depending on the power source voltage.

(E) After replacement of the parts, make sure the diode current is within the range of 300±20 mA.



(Fig. 26)



(Fig. 27)

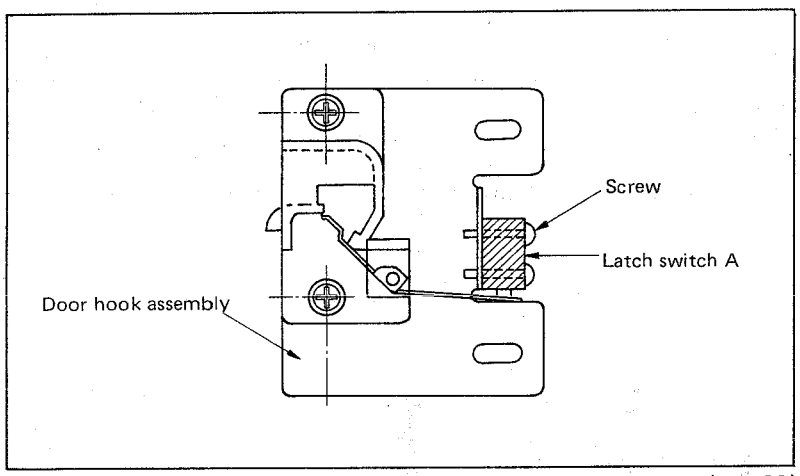
WARNING

WHEN THE 15 AMP FUSE IS BLOWN DUE TO THE OPERATION OF SHORT SWITCH, YOU MUST REPLACE LATCH SWITCH A, LATCH SWITCH B AND SHORT SWITCH THEN FOLLOW THE ADJUSTMENT PROCEDURES BELOW.

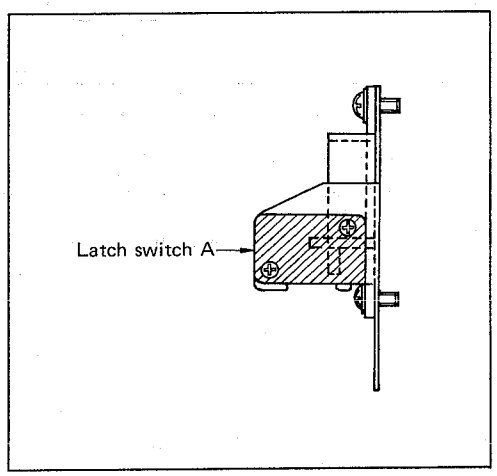
2. Adjustment of latch switch A (primary)

(A) Mounting of the latch switch to the door hook

Mount the latch switch A to the door hook assembly by securing screws as shown in Fig. 28 and 29.



(Fig. 28)



(Fig. 29)

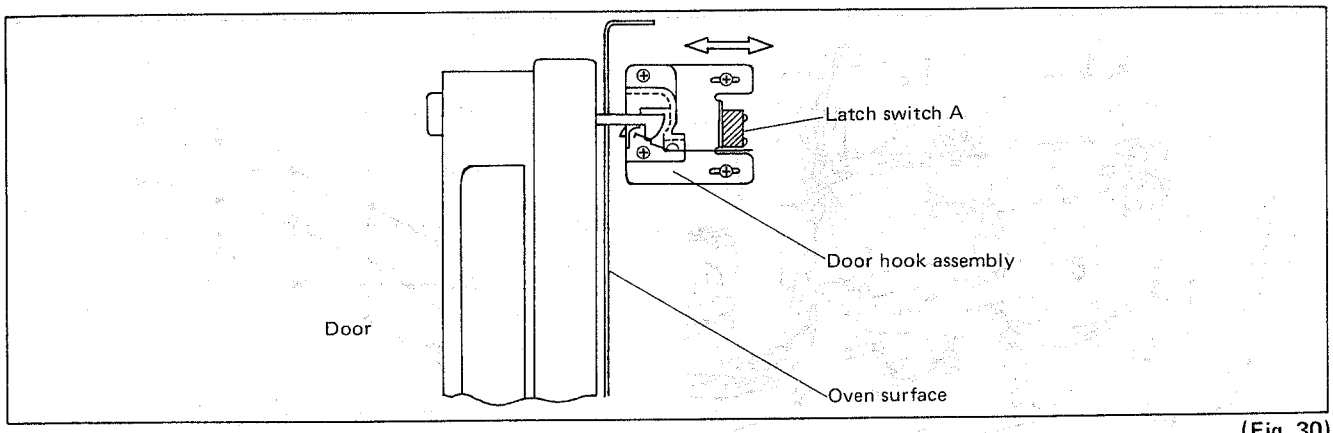
NOTE No specific adjustment during installation of the latch switch A to the door hook is necessary.

(B) Installation of the door hook assembly to the oven assembly

When mounting the door hook assembly to the oven assembly, be sure to adjust the door hook assembly by moving in the arrow direction so that the oven door will not have any play in it.

Check for play in the door by pulling on the door handle without pushing the handle's latch button.

Make sure that the latch key positions correctly during adjustment. Also make sure that the latch key moves smoothly after adjustment is completed.



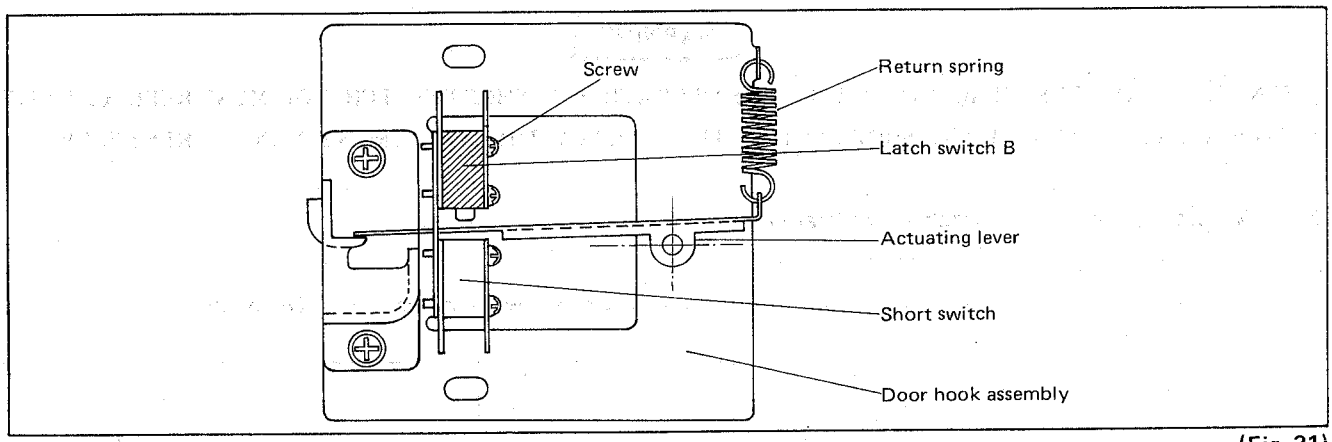
(Fig. 30)

3. Adjustment of latch switch B (secondary)

(A) Mounting of the latch switch B to the door hook

Latch switch B and the short switch are installed on to the door hook assembly as shown in Fig. 31.

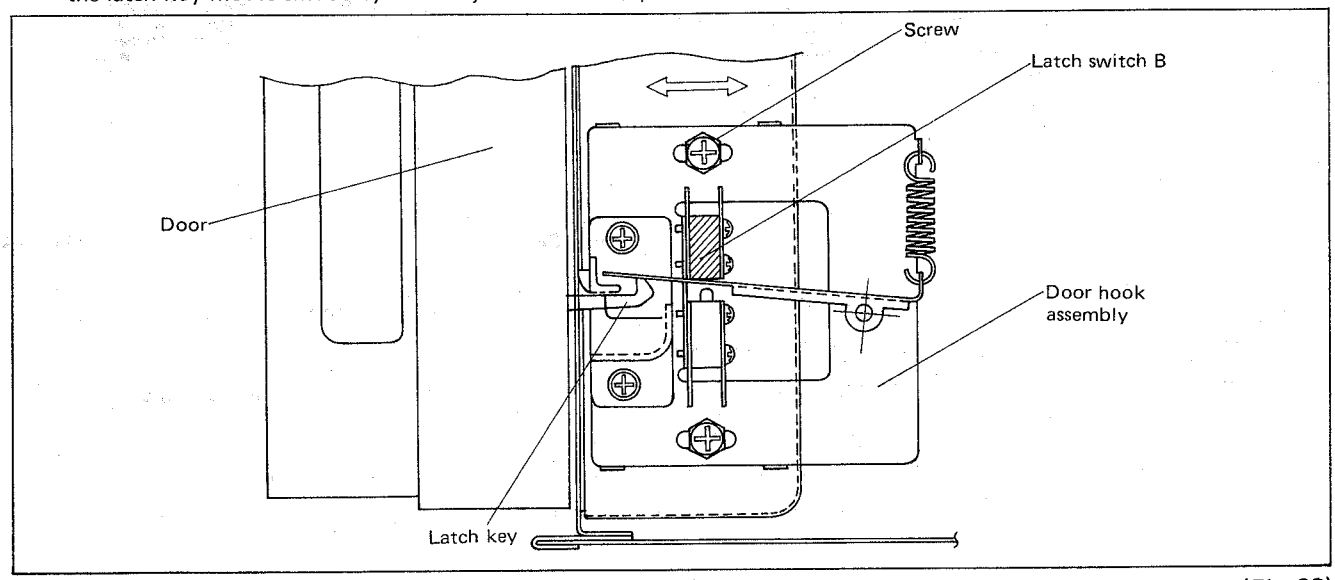
NOTE No specific adjustment during installation of the latch switch B and short switch to the door hook is necessary.



(Fig. 31)

(B) Installation of the door hook assembly to the oven assembly

Adjust the door hook by moving it in the direction of arrow in Fig. 32, so that the oven door will not have any play in it. Check for play in the door by pulling on the door handle without pushing the handle's latch button. Make sure that the latch key moves smoothly after adjustment is completed.



(Fig. 32)

4. Measurement of the magnetron's output

The power output of the magnetron can be measured by performing a simple water temperature rise test.

Equipment needed for the Test:

* Two 1 liter beakers
* One glass thermometer
* Stopwatch

NOTE Check the line voltage under load. Low voltage will lower the magnetron output.
Make all temperature and time tests with accurate equipment.

(A) Fill the two 1 liter beakers with water and mark one A and one B.

(B) Stir the water in each beaker with the thermometer and record each beaker's temperature.

Beaker A's temperature = T1A

Beaker B's temperature = T1B

(C) The average value (T1) of T1A and T1B is calculated as follows:

$$T1 = \frac{T1A + T1B}{2}$$

(D) Place both beakers on the center of the glass cook plate.
Set the oven for High power and set two minutes. Heat the water for exactly two minutes.

(E) When the heating is finished, again stir the water with the thermometer and measure the temperature rises as T2A and T2B.

(F) The average value (T2) of T2A and T2B is calculated as follows:

$$T2 = \frac{T2A + T2B}{2}$$

(G) Subtract T1 from T2. This will give you the temperature rise.

(H) The normal temperature rise for this model is 16° to 20°F (8.9 to 11°C) at the "High" power selection.

* If no temperature rise is noted, refer to the "TROUBLE SHOOTING GUIDE".

PROCEDURE FOR MEASURING RADIATION LEAKAGE

WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm² (1 mW/cm² for Canada) inform the PANASONIC CO. (MECA, PHI or MELCA) immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by HEW and NHW regulation. This requirement must be strictly observed. In addition the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE The U.S. government standard is 5 mW/cm² while in the customer's home. 2 mW/cm² stated here is Panasonic's own voluntary standard.

1. Equipment

* Electromagnetic radiation monitor
* Glass thermometer 100°C or 212°F
* 600cc glass beaker

2. Procedure for measuring radiation leakage

(A) Pour 275 ± 15cc (9 ozs ± 1/2 oz) of 20 ± 5°C (68 ± 9°F) (50cc for Canada) water in a beaker which is graduated to 600 cc, and place the beaker in the center of the oven.

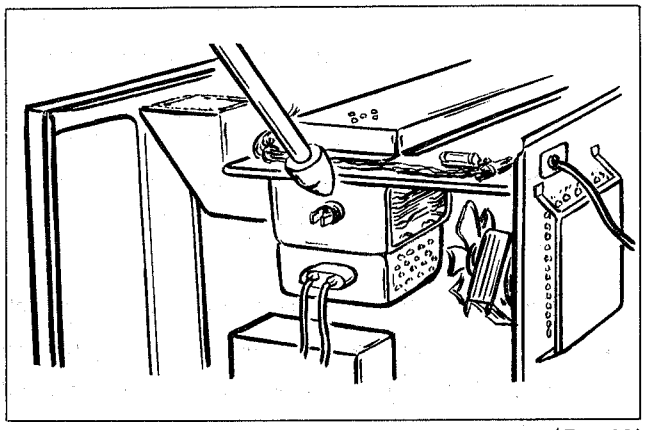
(B) Set the radiation monitor to 2450 MHz and use it following the manufacturer's recommended test procedure to assure correct results.

(C) When measuring the leakage, always use the 2 inch (5 cm) spacer supplied with the probe.

(D) Press the start button and with the magnetron oscillating, measure the leakage by using an electromagnetic radiation monitor by holding the probe perpendicular to the surface being measured.

(1) Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron. (Fig. 33)



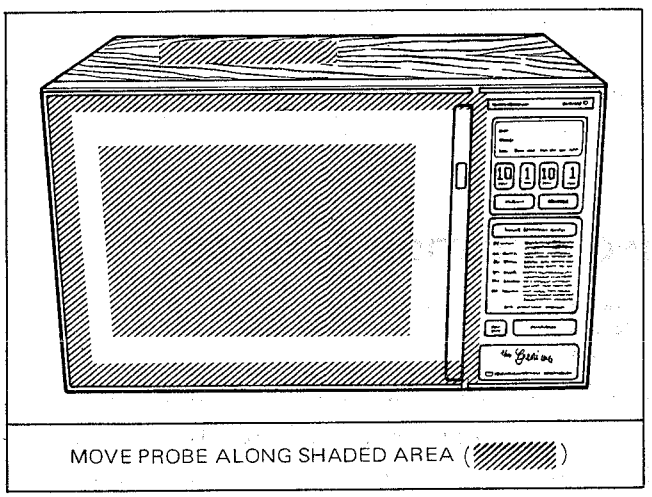
(Fig. 33)

WARNING

AVOID CONTACTING ANY HIGH VOLTAGE PARTS.

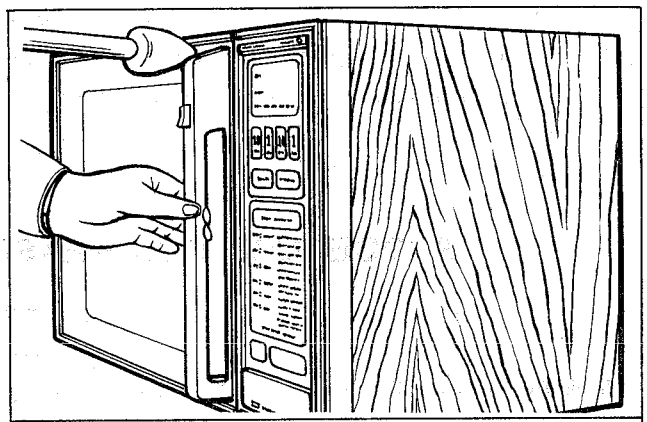
(2) Measurements with a fully assembled oven.

After all components, including the outer panel, are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opeings and air inlet openings.



MOVE PROBE ALONG SHADED AREA (▨)

(Fig. 34)



BEFORE LATCH SWITCH INTERRUPTION

(Fig. 35)

(E) Radiation leakage must not exceed the values prescribed below.

NOTE
1. Leakage with the outer panel removed . . . less than 5 mW/cm^2
2. Leakage for a fully assembled oven with door normally closed . . . less than 2 mW/cm^2 (1 mW/cm^2 for Canada)
3. Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] with door pulled to outward . . . . . less than 2 mW/cm^2

3. Note when measuring

(A) Do not exceed meter full scale deflection.

(B) The test probe must be moved no faster than 1 inch/sec (2.5 cm/sec) along the shaded area, otherwise a false reading may result.

(C) The test probe must be held with the grip portion of the handle. A false reading may result if the operator's hand is between the handle and the probe.

(D) When testing near a corner of the door, keep the probe perpendicular to the surface making sure the probe end at the base of the cone does not get closer than 2 inches (5 cm) from any metal. If it does, erroneous readings may result.

(E) When high leakage is suspected, do not move the probe horizontally along the oven surface, this may possibly cause probe damage.

4. Record keeping and notification after measurement

(A) After adjustment and repair of any radiation interrupting or radiation blocking device, make a repair report, record the measured values and keep the data.

(B) Should the radiation leakage be more than 2 mW/cm^2 (1 mW/cm^2 for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify the PANASONIC Co. (MECA, PHI or MELCA).

5. At least once a year, have the radiation monitor checked for calibration by its manufacturer

CUSTOMER COMPLAINTS NOT RELATED TO OVEN FAILURE

When you get a complaint from your customer, please investigate the complaint carefully before going to the customer's home. If the following symptoms apply, please educate the customer in the proper use of the microwave oven in order to eliminate an unnecessary call.

CONDITION	CAUSE	REMEDY
Microwave oven does not work	Inserting many plugs into one plug receptacle and using them at the same time (causes over loading)	Avoid using other electrical appliances when you use the microwave oven
	Microwave oven plug is not inserted tightly	Insert microwave oven plug tightly
Output power is too low	Low power voltage	Use the microwave oven at adequate electrical power
	Food temperature is too low	This is not, in reality a problem, therefore please expect to cook a little longer
Sparks occuring	Using metallic ware and allowing it to touch the oven wall	Do not use metallic ware for cooking except where noted in the cook book.
	Ceramic ware trimmed in gold or silver powder is used	Do not use any type of cookware with metallic trimming
Uneven cooking	Inconsistent intensity of microwave by it's characteristics	1. Wrap the thinner part with aluminum foil 2. Use plastic wrap or cover with a lid 3. Stir once or twice while cooking such as soup, cocoa or milk.

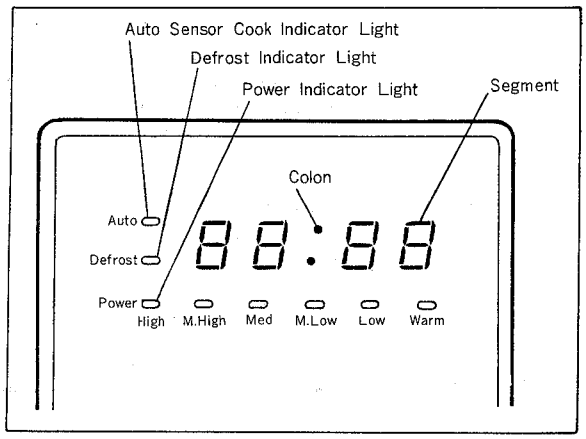
TROUBLESHOOTING GUIDE

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge the high voltage capacitor (see page 15)
4. When checking the continuity of the switches of transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
5. Do not touch any part of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel. Always touch yourself to ground while working on this panel to discharge any static charge built up in your body.

First of all operate the microwave oven following the correct operating procedures described on pages 3 to 10 either by time cooking or in case of NE-7910, NE-7910C auto sensor cooking, in order to find the exact cause of any trouble.

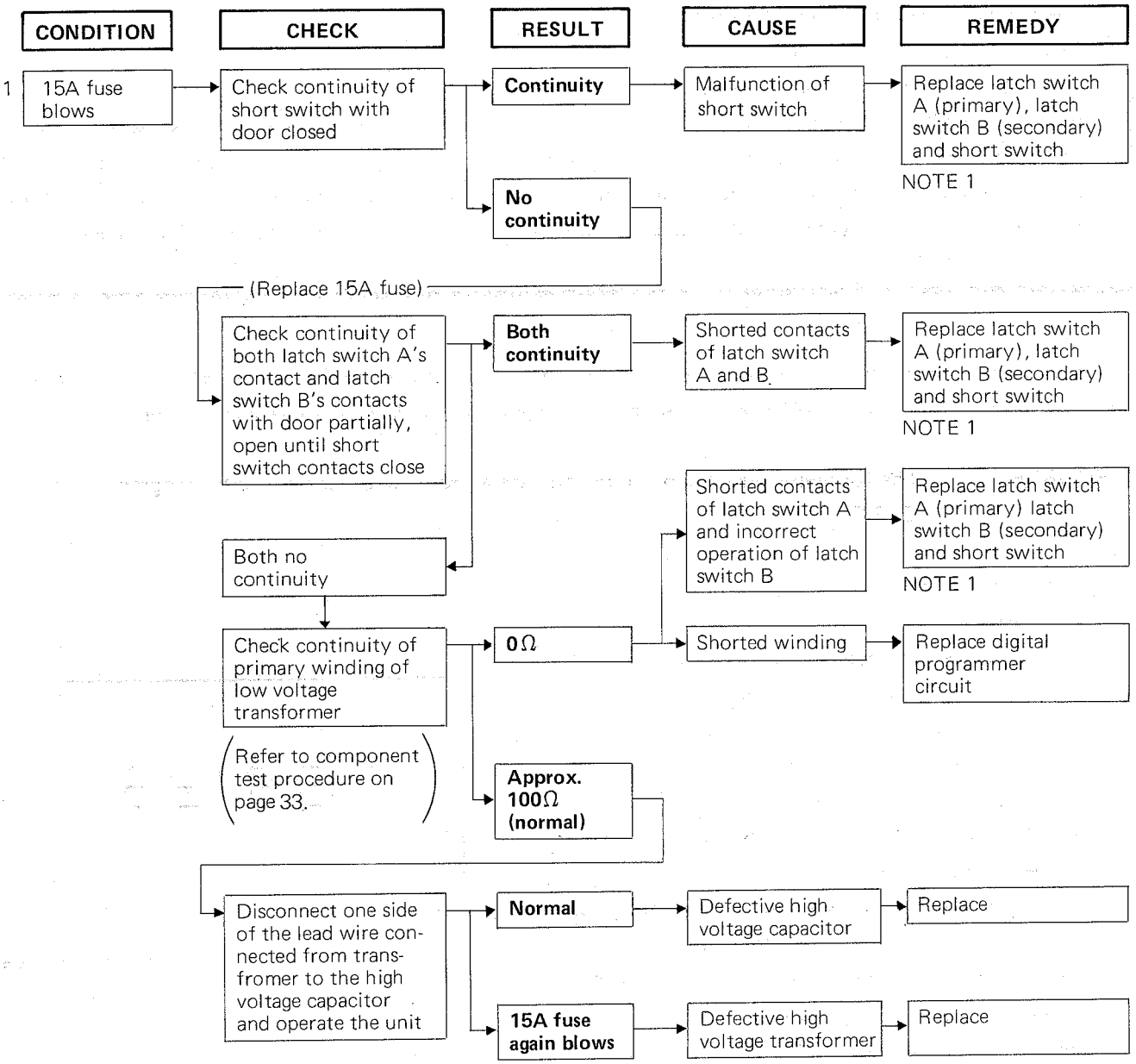
[TROUBLE 1] The following visual conditions indicate a probable defective digital programmer circuit (D.P.C.).

1. Incomplete segments
   - A. Segments missing.
   - B. Partial segments missing.
   - C. Digit flickering other than normal fluorescent slight flickering.
   - D. Colon does not turn on or does not blink when the clock set button is pressed.
2. A distinct change in the brightness of one or more numbers in the display.
3. One or more digits in the display not on when they should be.
4. Wrong or no power indicator light for power level selected.
5. Display indicates a number different from one touched.
   For example, touch 5, and 3 appears in the display.
6. Specific numbers (for example 2 or 3) will not display.
7. Display does not count down with time cooking or when using display as a timer.
8. Display does not count up with clock operation.
9. Oven is programable and cooks normally but no display shows.
10. Display obviously jumps in time while counting down or up.
11. Display counts down noticoably too fast while cooking.
12. Display can not shift from the first stage cooking to the second stage cooking while 2-phase cooking.
13. Display does not stop counting down with time cooking even when stop pad (button) is tapped.
14. TOD does not reappear when cooking is finished.

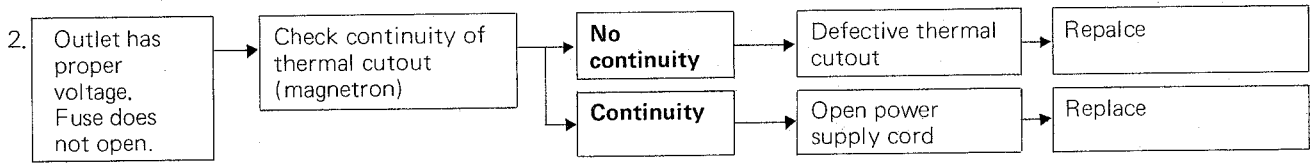


(Fig. 36)

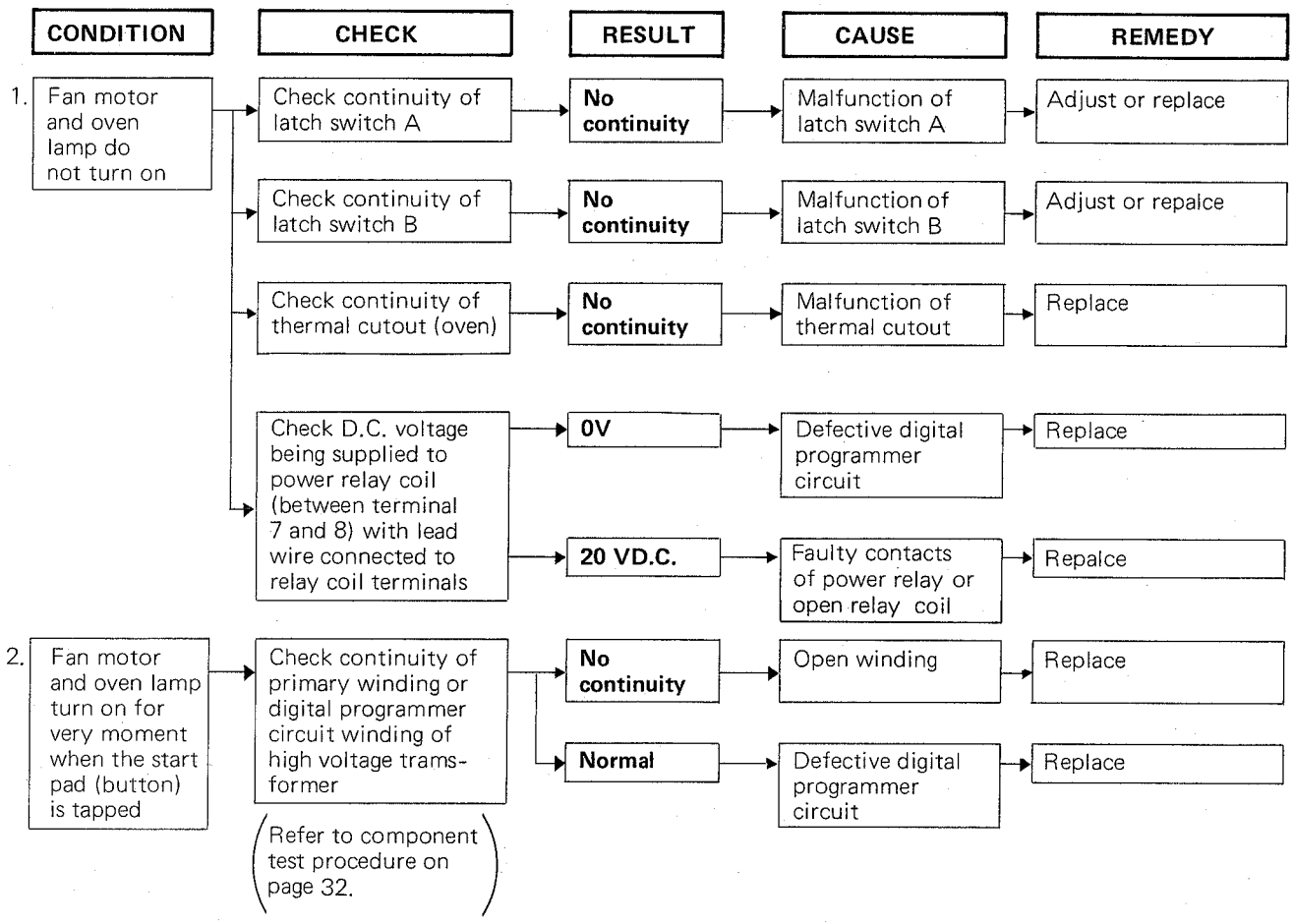
[TROUBLE 2] **Oven does not operate at all; Display window does not dispaly any figures and any inputs can not be accepted.**


CONDITION
CHECK
RESULT
CAUSE
REMEDY
1
15A fuse blows
Check continuity of short switch with door closed
Continuity
Malfunction of short switch
Replace latch switch A (primary), latch switch B (secondary) and short switch
NOTE 1
No continuity
(Replace 15A fuse)
Check continuity of both latch switch A's contact and latch switch B's contacts with door partially, open until short switch contacts close
Both continuity
Shorted contacts of latch switch A and B
Replace latch switch A (primary), latch switch B (secondary) and short switch
NOTE 1
Shorted contacts of latch switch A and incorrect operation of latch switch B
Replace latch switch A (primary) latch switch B (secondary) and short switch
NOTE 1
Both no continuity
Check continuity of primary winding of low voltage transformer
0Ω
Shorted winding
Replace digital programmer circuit
Refer to component test procedure on page 33.
Approx. 100Ω (normal)
Disconnect one side of the lead wire connected from transfromer to the high voltage capacitor and operate the unit
Normal
Defective high voltage capacitor
Replace
15A fuse again blows
Defective high voltage transformer
Replace

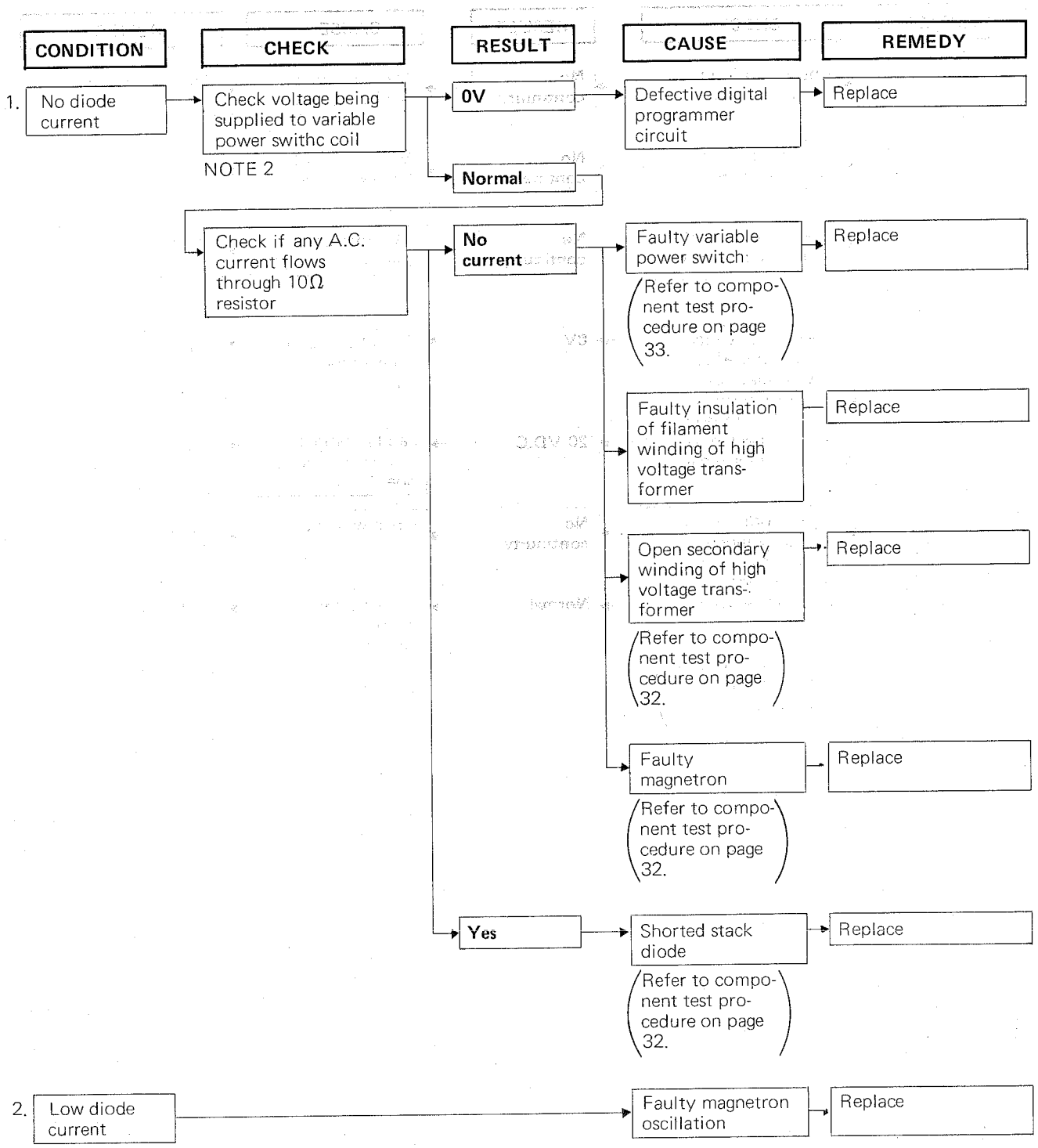
NOTE 1: All these switches must be replaced at the same time, please refer to pages 21 and 22 for adjustment instructions.



[TROUBLE 3] **Display shows all figures set, but microwave oven does not start cooking even though desired power and time are set and start pad (or button) is tapped.**


CONDITION
CHECK
RESULT
CAUSE
REMEDY
1. Fan motor and oven lamp do not turn on
Check continuity of latch switch A
No continuity
Malfunction of latch switch A
Adjust or replace
Check continuity of latch switch B
No continuity
Malfunction of latch switch B
Adjust or repalce
Check continuity of thermal cutout (oven)
No continuity
Malfunction of thermal cutout
Replace
Check D.C. voltage being supplied to power relay coil (between terminal 7 and 8) with lead wire connected to relay coil terminals
0V
Defective digital programmer circuit
Replace
20 VD.C.
Faulty contacts of power relay or open relay coil
Repalce
2. Fan motor and oven lamp turn on for very moment when the start pad (button) is tapped
Check continuity of primary winding or digital programmer circuit winding of high voltage trams-former
No continuity
Open winding
Replace
Normal
Defective digital programmer circuit
Replace
Refer to component test procedure on page 32.

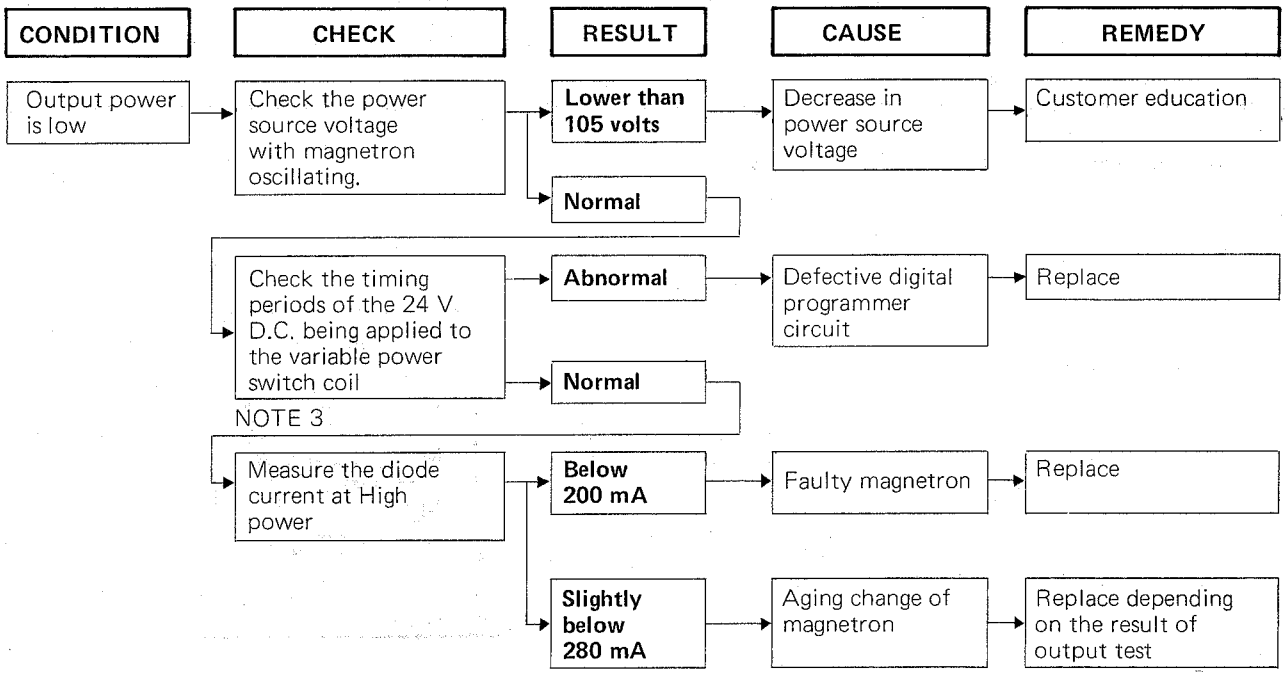
[TROUBLE 4] **The oven does not cook even though oven lamp lights and fan motor rotates. (No microwave oscillation)**



NOTE 2: Disconnect two lead wires connected to variable power switch coil. Set time and set power at high position. Normal digital programmer circuit should read approx. 24V D.C. continuously.

[TROUBLE 5] Output power is low

First of all, check if output power is realy low following "measurement of magnetron's output on page 23.



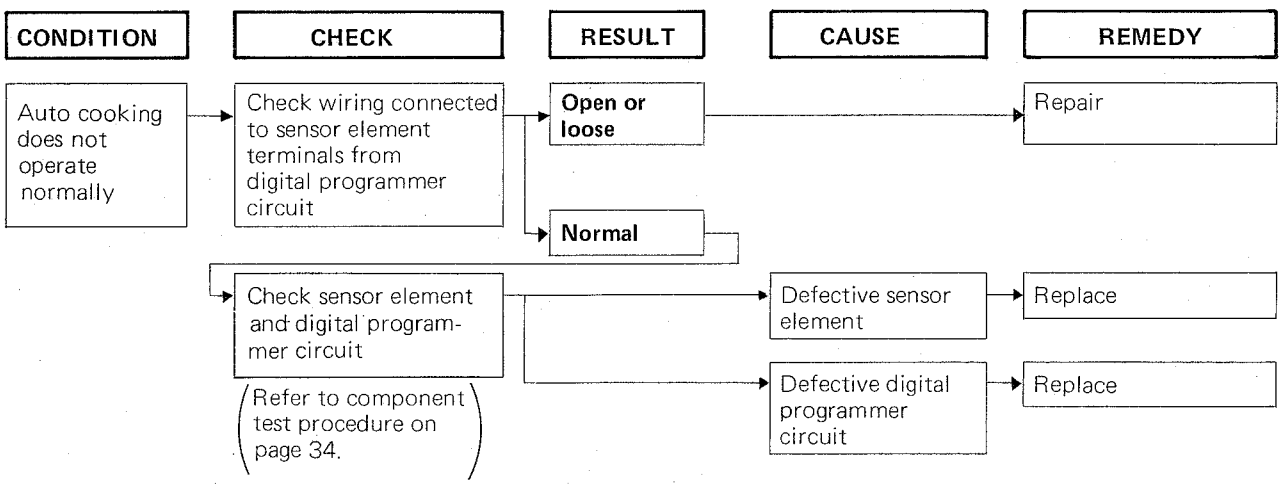
NOTE 3: The following chart shows the timing periods of the variable power switch.

POWER	24 V ON TIME	24 V OFF TIME
High	22 (seconds)	0 (seconds)
M. High	20	2
Med.	15	7
M. Low	11	11
Low	6	16
Warm	2	20
Defrost	7	15

(Fig. 37)

[TROUBLE 6] Only for model NE-7910, NE-7910C

Microwave oven does not operate normally, only when auto sensor cooking is selected.



COMPONENT TEST PROCEDURE

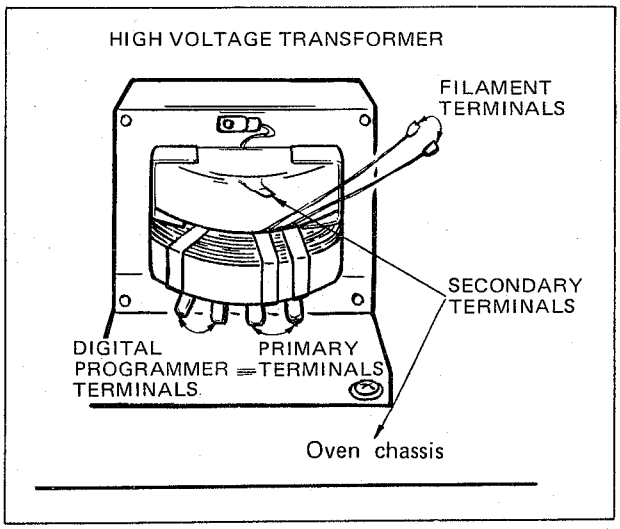
1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the capacitor by shorting across the capacitor terminals with an insulated lead wire.

1. High voltage transformer (refer to Fig 38)

(A) Remove connections from the transformer terminals and check continuity.

(B) Normal readings should be as follows:

Secondary winding . . . . . .Approx. 50Ω ~ 70Ω
Filament winding . . . . . .Approx. 0Ω
Primary winding . . . . . .Approx. 0Ω
Digital programmer winding . . . . . .Approx. 0Ω



(Fig. 38)

2. High voltage capacitor

(A) Check continuity of capacitor with meter on highest OHM scale.

(B) A normal capacitor will show continuity for a short time, and then indicate open once the capacitor is charged.

(C) A shorted capacitor will show continuous continuity.

(D) An open capacitor will show open or infinite resistance.

(E) Resistance between each terminal and chassis should be infinite.

3. Diode

The diode is located on the base near the transformer.

(A) Isolate the diode assembly (diode and varistor) from the circuit by disconnecting the leads.

(B) With the ohmmeter set on the highest resistance scale, measure the resistance across the diode assembly terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions. A normal diodes' resistance will be infinite in one direction and several hundred KΩ in the other direction.

4. Magnetron

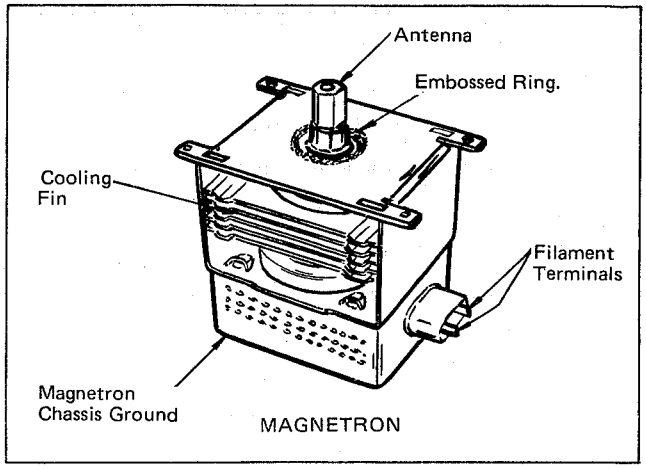
For complete magnetron diagnosis, refer to "Measurement of the Magnetron's output" (page 23).

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.

(A) Isolate magnetron from the circuit by disconnecting the leads.

(B) A continuity check across magnetron filament terminals should indicate one ohm or less.

(C) A continuity check between each filament terminal and magnetron case should read open.



(Fig. 39)

5. Variable power switch

(A) Isolate the variable power switch from the circuit by disconnecting all leads and check continuity.

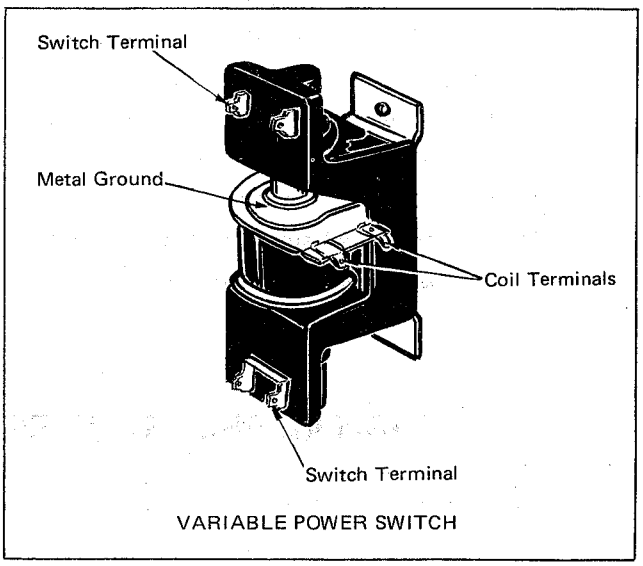
(B) A continuity check across the switch coil should be about 200 ohms.

(C) A continuity check between switch terminals should read open.

(D) A continuity check between each switch terminal and ground should read open.

(E) In order to check if the contacts of the variable power switch are operating normally, do the following test procedure.

* Follow the procedure on page 20 for measuring the diode current.
* Now select a power other than high and start the oven.
* Observe the diode current and you can tell if the switch contacts are operating and closing.
* You can follow the chart in Fig. 37 on page 31 to help you determine if the variable power switch contacts are working properly.



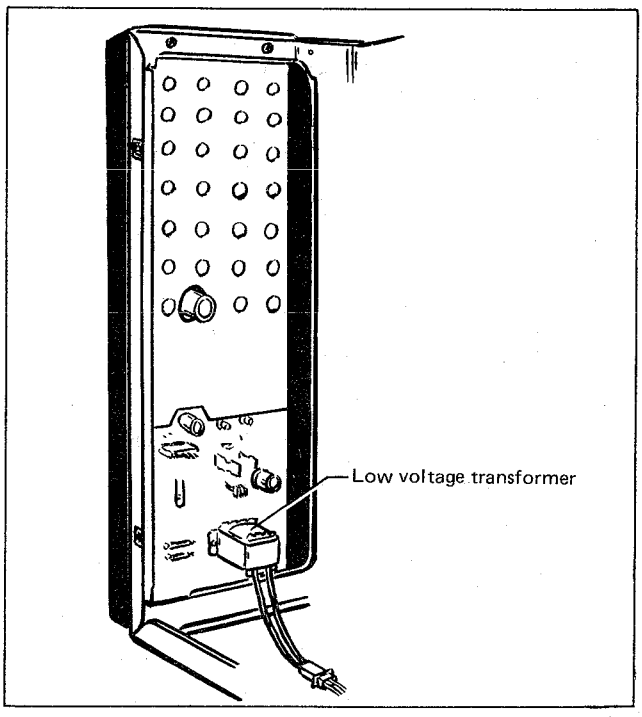
(Fig. 40)

6. Low voltage transformer

The low voltage transformer is located in lower side of the digital programmer circuit.

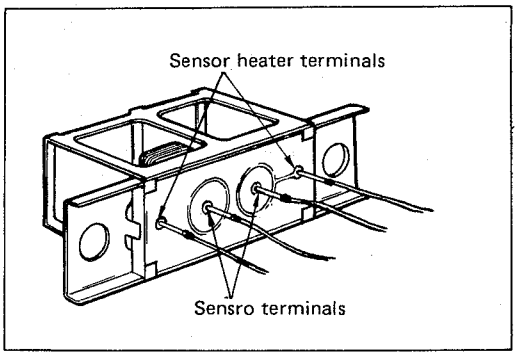
(A) Remove lead wire connector of the low voltage transformer from lead wire harness and check continuity.

(B) Normal reading of primary winding is about 90 – 110 ohm.



(Fig. 41)

7. Sensor element and Digital programmer circuit (refer to Fig. 42)



(Fig. 42)

(A) Check across sensor heater terminals. Normal cold resistance should read about 6 ohm.

(B) In order to make sure if the auto sensor function of digital programmer circuit is in working order, do the following test procedure.

1) Place the water load in the oven.
2) Unsolder two lead wires connected to the sensor terminals.
3) Set auto sensor cooking A1.
4) Tap the start pad to start auto cooking.
5) Auto cooking indicator light starts blinking. One blink cycle is one second.
6) 10 seconds after start pad is touched, short the disconnected lead wires for 5 seconds and then open. You can count 10 seconds by 10 blinks of auto indicator light. Before shorting lead wires, you can watch the sensor heater glow red.
7) The oven lamp will dim a little, about a minute after the start pad is touched. This indicates that the magnetron has started oscillation.
8) 10 seconds after magnetron oscillation, short the disconnected lead wires again.
9) Auto cooking A1 stops automatically when lead wires are shorted. If above condition is obtained, you can determine that the digital programmer circuit is in working order.

DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE

After replacing the digital programmer circuit, make the digital programmer circuit test according to the following procedures in order to make sure that the digital programmer circuit and the microwave oven circuit are working in order.

1. Connect the power supply cord plug into the wall receptacle and place a water load in the oven, Colon comes out in the display window.
2. Tap the reset/stop pad (button) and press the clock set button. The display window show 00:00 and the colon will blink.
3. Enter the time of the day (T.O.D.) by tapping the appropriate number pads (buttons).
   For example, if it is 10:25 (a.m. or p.m.), tap 10 min. pad once, 10 sec. pad twice and 1 sec. pad 5 times.
   The display window will show 10:25 with the colon blinking.
   Push the clock set button again. The colon stops blinking and T.O.D. can be registered into the digital programmer circuit.
4. Tap the power select pad (button)
   The display window will show 00 00 and the power indicator light you set turns on.
   One tap : High power indicator light
   Two taps : M. High power indicator light
   Three taps : Med power indicator light
   Four taps : M. Low power indicator light
   Five taps : Low power indicator light
   Six taps : Warm power indicator light

5. Tap the reset/stop pad. The display window will show T.O.D. again.
6. Select the High power and set the time at 12 minutes 34 seconds.
   High power indicator light turns on and the display shows 1 2 3 4.
7. Tap the start pad (button)
   The power indicator light blinks. Timer counts down by second.
   Microwave activity starts. Fan motor and turntable begins to rotate. Oven lamp turns on.
8. Press the handle latch button. The power indicator light stops blinking. Timer stops counting down.
   Microwave activity stops. Fan motor and turntable stop functioning. Oven lamp turns off.
9. Tap the start pad again. Oven operates as item 7.
10. Tap the reset/stop pad. Oven stops functioning as item 8.
11. Tap the reset/stop pad again. T.O.D. reappears in the display window.
12. Remove the hot water from the oven.
    "For models NE-7910 and NE-7910C, continue the test following the procedure below".
13. Pour 200 ± 20cc of water in a beaker and place the beaker in the center of the oven.
14. Tap the auto sensor control pad five times. The auto sensor cook indicator light turns on and the display shows A5.
15. Touch the start pad to start auto cooking A5.
    The auto sensor cook indicator light blinks. Fan motor and turntable begins to rotate. Oven lamp turns on.
16. The oven lamp will dim a little, about a minute after the start pad is touched. This indicates that the magnetron has started oscillation.
17. Auto cooking automatically switches to time cooking in 3 min. to 5 min. by the sensor function after start pad is touched. The cooking time will change depending on the water temperature, the shape of the container or power source voltage.
18. When the balance of time has elapsed, TOD reappears in the display and oven beeps.
    Finally make sure that TOD in the display is correct.

NECESSARY TOOLS AND MEASURING INSTRUMENTS

1. Necessary tools

Tools normally used for TV servicing are sufficient. Standard tools are listed below.

* Diagonal pliers
* Phillips head screwdriver
* Socket wrench (SIZE 8, 15mm)
* Nutdriver (SIZE 5.5, 7, 8 mm)
* Solder
* Vinyl insulation tape
* Long nose pliers
* Slotted head screwdriver
* Adjustable wrench
* Soldering iron
* Polishing cloth

2. Necessary measuring instruments

* Tester (Volt D.C/A.C – Ohm meter)
* Ruler
* Electromagnetic radiation monitor
* Stop watch
* 600 cc glass beaker or equivalent
* Glass thermometer 100°C or 212°F
* Two 1 liter beakers or equivalent

EXPLODED VIEW AND PARTS LIST

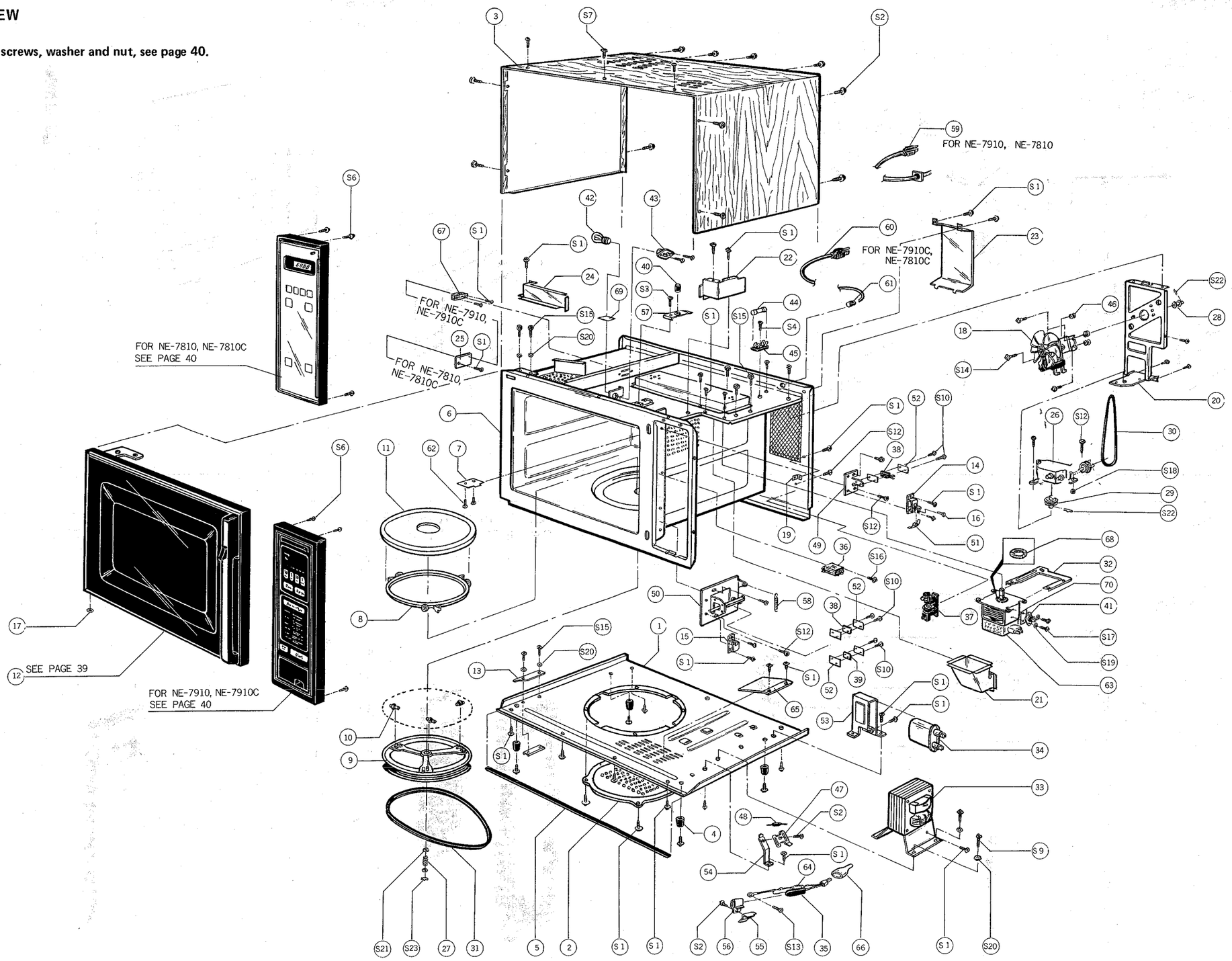
NOTE: Part numbers are indicated on all parts. Please use these Part Numbers for parts orders.
Components identified by shaded area have special characteristics important for safety, when replacing any of these components use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
1	ANE1001B60AP	Base	1	○
2	ANE1026B60AP	Turntable cover A	1	○
3	ANE110AB60AP	Outer panel	1	○
4	ANE1008-760	Rubber foot	4	○
5	ANE1047B60AP	Lower sash	1	○
6	ANE201AB60AP	Oven assembly	1	○
7	ANE2055-850	Cover A	1	○
8	ANE290D-860	Roller ring assembly	1	○
9	ANE201B-810	Pulley D	1	○
10	ANE201KB60AP	Roller A assembly	1	○ (NOTE 1)
11	ANE201FB60AP	Turntable	1	○
12	ANE301EB60AP	Door assembly	1	○
13	ANE3007B60AP	Lower hinge	1	○
14	ANE3020B60AP	Door hook A	1	○
15	ANE3267B60AP	Door hook B	1	○
16	ANE3273B60AP	Lever pin	1	○
17	ANE3081B60AP	Door hinge spacer	1	○
18	ANE400YB60AP	Fan motor assembly	1	○
19	ANE4111B60AP	Fan motor bracket A	1	○
20	ANE4112B60AP	Fan motor bracket B	1	○
21	ANE401EB60AP	Air guide A assembly	1	○
22	ANE400SB60AP	Air guide C	1	○
23	ANE4030B60AP	Air guide D	1	○
24	ANE401BB60AP	Exhaust guide B assembly	1	○
25	ANE4107C30AQ	Exhaust guide	1	○ For NE-7810, NE-7810C
26	ANE490C-820	Gear box assembly	1	○
27	ANE4143-810	Pulley stopper spring	1	○
28	ANE4131-810	Pulley A	1	○
29	ANE4133B60AP	Pulley C	1	○
30	ANE4060B60AP	Belt A	1	○
31	ANE4110-860	Belt B	1	○
32	ANE500P-820	Magnetron bracket	1	○
33	ANE6005B60AP	High voltage transformer	1	○
34	ANE6090B60AP	High voltage capacitor	1	○
35	ANE6202B60AP	Stack diode	1	○
36	ANE6126B60AP	Power relay	1	○
37	ANE6330930AP	Variable power switch	1	○
38	ANE6142-780	Latch switch	2	○
39	ANE6158B60AP	Short switch	1	○
40	ANE6145780AC	Thermal cutout	1	○ For oven
41	ANE6145930AP	Thermal cutout	1	For magnetron
42	ANE6030B60AP	Oven lamp	1	○
43	ANE6152B60AP	Oven lamp socket	1	○
44	ANE6230C30AQ	Fuse	1	○
45	ANE6231770AP	Fuse holder	1	
46	ANE6324-820	Cushion rubber	3	○
47	ANE600T930AP	Terminal board assembly	1	
48	ERW2PF100	Resistor (10Ω)	1	
49	ANE6242B60AP	Latch switch bracket	1	○
50	ANE302PB60AP	Latch switch B bracket	1	○
51	ANE6241B60AP	Latch switch lever	1	○
52	ANE6306910AP	Insulation sheet R	6	
53	ANE6037B60AP	Capacitor bracket	1	○
54	ANE6143B60AP	Terminal board bracket	1	○
55	ANE6069B60AP	Diode bracket	1	○
56	ANE6069930AP	Diode holder	1	
57	ANE6125-780	Thermal cutout bracket	1	○
58	ANE8015-611	Spring	1	○
59	ANE910AB70AP	Power supply cord	1	○ For NE-7910, NE-7810 (NOTE 2)
60	ANE900CB60CP	Power supply cord	1	○ For NE-7910C, NE-7810C
61	ANE9027510RN	Cord bushing	1	For NE-7910C, NE-7810C
62	ANE9080-730	Clip	2	
63	2M157-M1	Magnetron	1	○
64	ERZR4K902	Varistor	1	
65	ANE4120B60CP	Exhaust cover	1	○ For NE-7910C, NE-7810C
66	ANE6139930AP	Insulation tube	1	
67	ANE601LB60AP	Sensor element	1	○ For NE-7910, NE-7910C
68	ANE5002910AP	Embossed ring	1	
69	ANE6040B60AP	Oven lamp sheet	1	○
70	ANE6238B60AP	Spacer	1	○

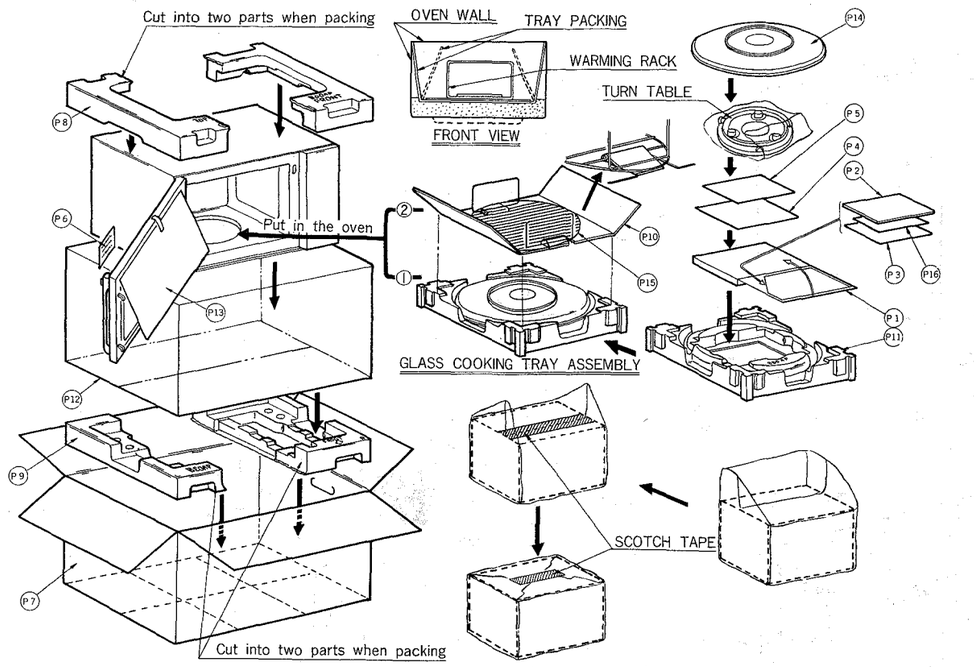
NOTE 1: When ordering the roller A assembly, three rollers will be shipped. When replacing the roller, three rollers should be replaced at the same time. Otherwise the turntable may not turn smoothly.
NOTE 2: This contains a cord bushing and a cord stopper.

EXPLODED VIEW

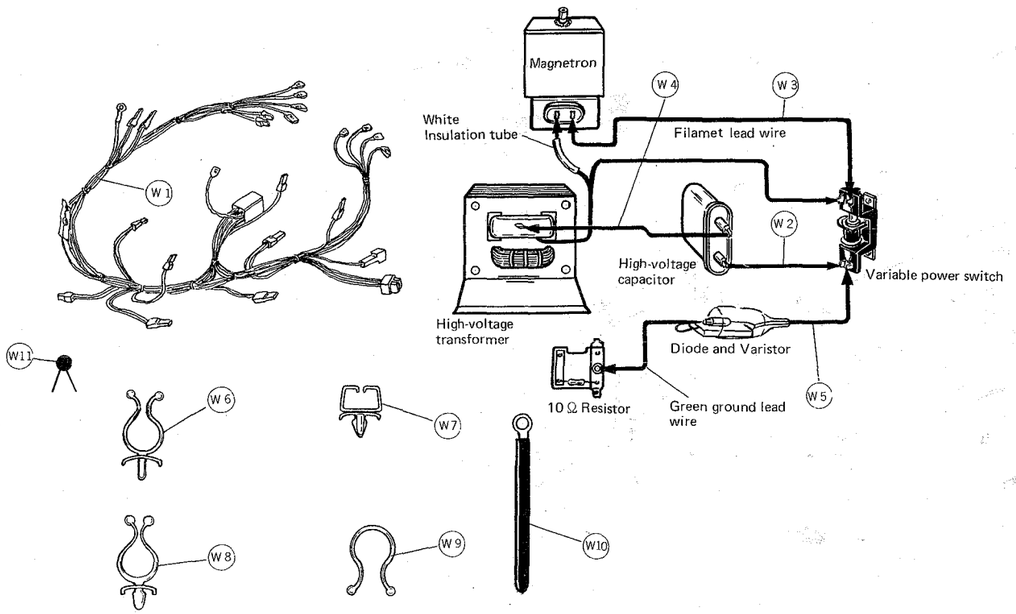
For screws, washer and nut, see page 40.



PACKING AND ACCESSORIES

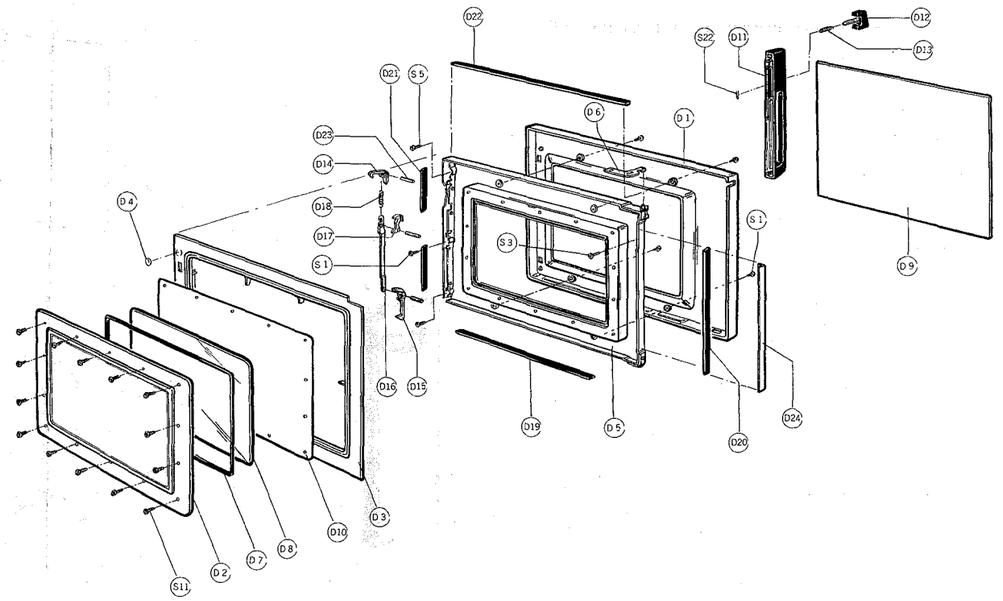


WIRING MATERIAL



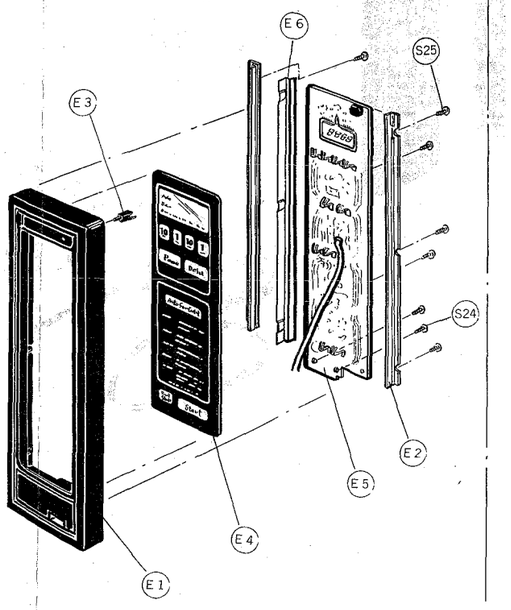
REF. NO. 12 DOOR ASSEMBLY

For screws, washer and nut, see page 40.

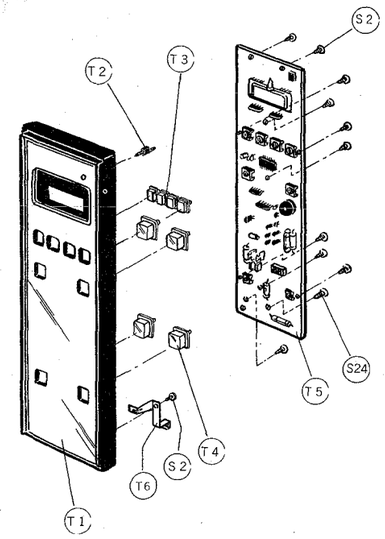


DIGITAL PROGRAMMER CIRCUIT FOR NE-7910 & NE-7910C

For screws, washer and nut, see page 40.



DIGITAL PROGRAMMER CIRCUIT FOR NE-7810 & NE-7810C



PACKING AND ACCESSORIES

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
P1	ANE000BB60AP	Cook book	1	○
P2	ANE000EB60AP	Supplemental cook book	1	○ For NE-7910, NE-7910C
P3	ANE0003B60AP	Operating instructions	1	○ For NE-7910
	ANE0003B60CP	Operating instructions	1	○ For NE-7910C
	ANE0003B70AP	Operating instructions	1	○ For NE-7810
	ANE0003B70CP	Operating instructions	1	○ For NE-7810C
P4	ANE0013B60AP	Warranty card	1	○ For NE-7910, NE-7810
	ANE0013910CP	Warranty card	1	○ For NE-7910C, NE-7810C
P5	ANE0169521AP	Servicenter list	1	For NE-7910, NE-7810
	ANE0169B60CP	Servicenter list	1	○ For NE-7910C, NE-7810C
P6	ANE0170B60AP	Door label	1	○ For NE-7910
	ANE0170B60CP	Door label	1	○ For NE-7910C
	ANE0170B70AP	Door label	1	○ For NE-7810
	ANE0170B70CP	Door label	1	○ For NE-7810C
P7	ANE0102B60AP	Outer case	1	○ For NE-7910
	ANE0102B60CP	Outer case	1	○ For NE-7910C
	ANE0102B70AP	Outer case	1	○ For NE-7810
	ANE0102B70CP	Outer case	1	○ For NE-7810C
P8, P9	ANE010AB60AP	Filler set	1	○
P10	ANE0108B60AP	Tray packing	1	○
P11	ANE0113B60AP	Tray styrol	1	○
P12	ANE0106910AP	Vinyl cover	1	
P13	ANE0107580AP	Door sheet		
P14	ANE0601B60AP	Glass cooking tray	1	○
P15	ANE0602B60AP	Warming rack	1	○ For NE-7910, NE-7810
P16	ANE0022B60AP	Rack instruction sheet	1	○ For NE-7910, NE-7810

WIRING MATERIAL

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
W1	ANE030AB60AP	Lead wire harness	1	○
W2	ANE0363-860	Lead wire	1	○
W3	ANE0351-770	Lead wire	1	
W4	ANE0351-820	Lead wire	1	○
W5	ANE0362B60AP	Lead wire	1	○
W6	ANE9133-770	Lead wire holder U	1	
W7	ANE9071-201	Lead wire holder B	1	
W8	ANE9123960AP	Lead wire holder P	4	
W9	ANE9073-350	Lead wire holder D	2	
W10	ANE9132910AP	Lead wire holder T	3	
W11	ERZC10DK241U	Varistor	1	This is assembled in lead wire harness.

REF. NO. 12 DOOR ASSEMBLY

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
D1	ANE302AB60AP	Door A assembly	1	○
D2	ANE3002B60AP	Door B	1	○
D3	ANE3085B60AP	Door C	1	○
D4	ANE3275B60AP	Door C cap	3	○
D5	ANE301QB60AP	Door E assembly	1	○
D6	ANE3006B60AP	Upper hinge	1	○
D7	ANE3031930AP	Door screen A rubber	1	
D8	ANE3145910AP	Door screen A	1	
D9	ANE3146B60AP	Door screen B	1	○
D10	ANE3197B60AP	Door screen C	1	○
D11	ANE300RB60AP	Door handle	1	○
D12	ANE3147B60AP	Handle latch button	1	○
D13	ANE3243910AP	Latch button spring	1	
D14	ANE3018B60AP	Door key A	1	○
D15	ANE3019B60AP	Door key B	1	○
D16	ANE3107B60AP	Door key lever	1	○
D17	ANE3139B60AP	Door key lever B	1	○
D18	ANE3021B60AP	Door key spring	1	○
D19	ANE3088B60AP	Ferrite rubber A	1	○
D20	ANE3089B60AP	Ferrite rubber B	1	○
D21	ANE3130B60AP	Ferrite rubber C	2	○
D22	ANE3131B60AP	Ferrite rubber D	1	○
D23	ANE3056930AP	Handle pin	3	
D24	ANE3183B60AP	Ferrite metal	1	○

DIGITAL PROGRAMMER CIRCUIT

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
For NE-7910 & NE-7910C				
E1	ANE800KB60AP	Escutcheon base assembly	1	○
E2	ANE6313B60AP	P.C.B. stopper	2	○
E3	ANE8225B60AP	Clock button	1	○
E4	ANE603QB60AP	Touch glass	1	○
E5	ANE603VB60AP	Digital programmer circuit	1	○
E6	ANE8240B60AP	Metal shield	1	○
For NE-7810 & NE-7810C				
T1	ANE800KB70AP	Escutcheon base assembly	1	○ For NE-7810
	ANE800KB70CP	Escutcheon base assembly	1	○ For NE-7810C
T2	ANE8225970AP	Clock button	1	
T3	ANE8024B70AP	Switch button	4	○
T4	ANE8081B70AP	Switch button	4	○
T5	ANE603LB70AP	Digital programmer circuit	1	○
T6	ANE8164B70AP	Ground metal	1	○

STANDARD PART

Ref. No.	Description	Part No.	Size (mm)	Q'ty	Usage
S1	Screw	XTWANE4+10B	4 x 10	4	Door A
				1	Door handle A
				1	Terminal board bracket
				1	Diode bracket
				1	Capacitor bracket
				2	Fan motor bracket A
				2	Air guide A
				1	High voltage capacitor
				2	Air guide C
				2	Cord stopper
				3	Turntable Cover A
				7	Base
				2	Door hook A
				2	Door hook B
				2	Sensor element
				2	Air guide D
				2	Exhaust guide B assembly
				2	Exhaust cover
S2	Screw	XTWANE4+12E	4 x 12	1	Terminal board assembly
				1	Diode bracket
				7	Outer case
				9	Digital programmer circuit (NE-7810, 7810C)
S3	Screw	XTWANE4+8B	4 x 8	1	Thermal cutout bracket
S4	Screw	XTNANE4+10B	4 x 10	1	Fuse holder

Ref. No.	Description	Part No.	Size (mm)	Q'ty	Usage
S5	Screw	XTW4+16B	4 x 16	2	Door handle A
S6	Screw	XTN4+16B	4 x 16	2	Escutcheon base
S7	Screw	XTC4+12BFZC	4 x 12	7	Outer panel
S8	Screw	XTWANE4+15B	4 x 15	4	Rubber foot
S9	Screw	XTNANE5+12B	5 x 12	2	High voltage transformer
S10	Screw	XYN3+F18	3 x 18	2	Latch switch A
				2	Latch switch B
				2	Short switch
S11	Screw	XST35+10V	3.5 x 10	14	Door B
S12	Screw	XYN4+F10S	4 x 10	2	Latch switch bracket
				2	Latch switch B bracket
				1	Variable power switch
				2	Gear box assembly
S13	Screw	XYN4+C8BNS	4 x 8	1	Diode assembly
S14	Screw	XSNANE4+13	4 x 13	3	Fan motor
S15	Screw	XYEANE5+C12S	5 x 12	2	Upper hinge
				2	Lower hinge
				4	Magnetron
S16	Screw	XYN3+F10S	3 x 10	1	Power relay
S17	Screw	XYN4+C6S	4 x 6	2	Thermal cutout (magnetron)
S18	Nut	XNG4ES	M4	2	Gear box assembly
S19	Washer	XWG4	M4	2	Thermal cutout (magnetron)
S20	Washer	XWC5BKX	M5	2	Upper hinge
				2	Lower hinge
				2	High voltage transformer
S21	Washer	XWGANE8	M8	2	Pulley D
S22	Wire pin	XPDANE3A19KP	3 x 19	1	Door handle C
				1	Pulley A
				1	Pulley C
S23	Wire pin	XPDANE8A28KP	8 x 28	1	Pulley D
S24	Screw	XTWANE3+12B	3 x 12	2	Low voltage transformer
S25	Screw	XTN4+12B	4 x 12	6	Digital programmer circuit (NE-7910, NE-7910C)

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